

**Virginia's Workforce:
Strategies for Achieving a Skilled,
Productive, and Educated Workforce**

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Submitted to:

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Contract No. 000-3SO-DF-1331
UI Project No. 07518-000-00

November 14, 2003

Acknowledgements

We thank Amber Sears for her able research assistance on all aspects of this project, and we also thank David Moskowitz and Michael Egner for their research assistance with this project. We thank Gail Robinson of the Virginia Employment Commission (VEC) for her helpful comments and support throughout this project. We also thank Darby Miller-Steiger and Manas Chattopadhyay of The Gallup Organization for their assistance with the survey component of the study. Finally, we thank members of the VEC Technical Committee including Lynette Coughlin, Larry Robinson, Sam Lupica, and David Tysinger for their comments. This research was funded by the Virginia Workforce Council and supported by the VEC. The views expressed are those of the authors and should not be attributed to the Virginia Workforce Council, the Virginia Employment Commission, The Urban Institute, its trustees, or its funders.

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Executive Summary

This study was conducted by The Urban Institute over a six-month period from mid-May to mid-November 2003 and was commissioned by the Virginia Workforce Council (VWC). The VWC was created in 1999 as a policy body to assist the Governor in meeting workforce training needs in the Commonwealth. The VWC's vision is:

“...to have and promote a well-trained, well-educated, highly skilled and qualified workforce that understands and meets the needs of employers and that is actively engaged in lifelong learning.”¹

This study provides the VWC with information to help them make important incumbent worker policy decisions over the next several years. Major economic transformations are underway in the Commonwealth of Virginia and nationwide in terms of the changing demand for workers by businesses and the changing characteristics of the workforce. As the Commonwealth prepares for the workforce development and economic development challenges of the next few decades, the results of this study will contribute to an ongoing examination in Virginia of the various policy and programmatic strategies that can ensure a skilled, stable, and productive workforce to meet the needs of the future.

Study Objectives

There are four general objectives for this study:

- *Analyze the current and changing characteristics of Virginia's workforce*, (i.e., understanding the supply side of the workforce).
- *Examine the trends in workforce demand* in future years, especially in terms of occupations that are expected to grow or decline and the skills that will be in demand (i.e., examine the future demand side of the labor market).
- *Review policies, approaches, and strategies for integrating emerging and diverse groups into the workforce* and that might be appropriate for public agencies, programs, and businesses to consider (e.g., identify potential “best practices”).
- *Recommend public and private sector policies and strategies* that might be appropriate for Virginia in the coming decades.

Study Components

In order to accomplish the four study objectives, this report is based on:

¹ Virginia Employment Commission. Virginia Workforce Council website at <http://www.vec.state.va.us/vecportal/vwc/> (Accessed September 20, 2003).

- *Analysis of existing data and statistics on demographic and workforce trends in Virginia;*
- *A telephone survey of a random sample of Virginians, conducted by The Gallup Organization under a subcontract from The Urban Institute, to learn about their current jobs and future work plans;*
- *Three forums with local and national representatives of the workforce development system and the business community (in Richmond and Abingdon, Virginia, and in Washington, D.C.), to gain their perspectives on the current system and ideas for the future; and*
- *A review of the relevant literature to identify best practices, approaches, and strategies that exist in Virginia and elsewhere for improving the overall skills and training of incumbent workers.*

Demographic and Workforce Trends in Virginia

Analysis of Virginia's population and labor market was based on official federal and state statistical databases from the VEC, the U.S. Census Bureau, and the U.S. Bureau of Labor Statistics (BLS). The following are key results of that analysis.

- *Virginia's population is expected to increase by about 5.6 percent between 2003 and 2008, ranging from a small loss of population in the Danville area to a 10 percent increase in the Virginia portion of the Washington metropolitan area.²*
- *There will be a shift in the age distribution of the population, with an increase in persons age 45 and older and a decrease in those between the ages of 25 and 44. The aging of the population and workforce is expected to continue beyond 2008 as the post-World War II baby-boom generation reaches retirement. Since older persons are less likely than younger persons to participate in the labor force, this population shift will likely lead to a lower labor force participation rate in Virginia, which currently ranges from a high of 78.5 percent in the Washington, DC area (Virginia portion) to a low of 61.1 percent in the Southwest region.*
- *The educational attainment in Virginia continued to rise in the 1990s; over 80 percent of adults over 25 had at least a high school diploma in 2000 (up from 75 percent in 1990). There is some regional variation in educational attainment, though. In general, the Washington, DC, Charlottesville, Norfolk, and Richmond areas have higher proportions of college educated persons and fewer without high school diplomas; while six areas have relatively lower levels of education—Danville, Johnson City, Northeast region, Northwest region, Southside region, and Southwest region. In these six areas, more than 25 percent of the population has no high school degree and less than 20 percent has a college degree.*

² For MSAs that cross state lines, we examine only the Virginia portion.

- *As is true nationwide, almost two-thirds of jobs in Virginia require on-the-job training or work experience and no specific educational level.* Of the approximately 150,000 job openings that are projected to be available in 2008, about 25 percent are expected to require a bachelor's degree or higher, 10 percent a post-secondary education or training, and over 60 percent are expected to require on-the-job training or experience, but no specific educational level.
- *The occupational makeup in Virginia will continue to shift away from manufacturing, mining, and agriculture over the next five years.* In particular, teachers, health care careers, and information technology are occupations expected to grow that require a college degree or more. However, the greatest increase in job openings is projected for cashiers and retail salespersons—two lower-skilled occupations. Occupations that are projected to decline over the next five years in Virginia include agriculture, textiles, railroad transportation, and mining.
- *Computer and information technology jobs will be important in many, but not all, parts of Virginia.* There is notable regional variation in the projected occupational changes. Information technology will be an important source of job openings in five MSAs (Charlottesville, Norfolk, Richmond, Roanoke, and Washington, DC), but is not one of the top growth occupations in the other seven areas of Virginia.

Perspectives of Current Virginia Workers and Employers

To better understand these demographic, workforce, and labor market trends and their policy implications, a Gallup survey of Virginians was conducted and three forums were held with business and community representatives. The following are some of the key results particularly relevant for future policy directions.

- *Problem-solving, teamwork, and “soft-skills” are important on the job.* Virginia workers most often cited problem solving skills and working as a team member as skills that are a primary part of their current job. Workforce development and business participants in all three forums cited the importance of soft skills such as timeliness and attendance, in addition to writing and math skills obtained during secondary school.
- *Computers are a critical part of jobs and the most important type of training workers might seek in the future.* More than two-thirds of Virginia workers report that the use of computers is a primary part of their current job and this is the most common skill workers say they might seek to upgrade. Over 70 percent of workers say they are likely to seek to upgrade their computer skills in the next five years.
- *The workplace is the most likely place workers say they will receive training.* On-site or on-the-job training was cited by workers as the most likely place to receive additional training. The local workforce center was cited as the least likely place to receive future training by Virginians who are currently working.

- *Workers in Virginia say their relationship with co-workers and supervisors is the most important aspect they want in the workplace environment.* The option to telecommute or work from home was least frequently cited as an important workplace characteristic.
- *The most important quality of life issues to Virginia workers are having time to spend with friends and family, and living in an area with a low crime rate.*
- *The majority of Virginians who plan to retire in the next ten years say they probably will work after retirement.* Over two-thirds of those planning to retire within ten years report that they are very or somewhat likely to seek paid work at some point after they retire, mostly likely part-time work. Several options—phased retirement, job sharing, reduced work schedules, and rehiring retired workers—are amenable to workers in Virginia and may induce older workers to remain in the labor force longer thereby mitigating the impact of the aging baby-boom generation on labor force participation and employment rates in Virginia.

Strategic Policy Recommendations for Improving the Skills and Training of Workers in Virginia

Six interrelated strategic recommendations are drawn from the cumulative analysis of this study. The recommendations represent a range of public and private strategies for training and retraining incumbent workers and are designed to assist Virginia in raising the skills and productivity of its workforce. There are two common underlying features of the recommendations. First, the success of reform strategies depends on state-level leadership along with strategies tailored to the special and diverse demographic, economic, and community characteristics of sub-state regional and local areas. Second, each of the recommendations assumes regular utilization of data and information related to programs, characteristics of the workforce, and trends in the labor market. Some of the strategies recommended here may already be in the planning stages or underway in Virginia since Governor Warner and the Virginia Workforce Council are actively engaged in assessing and reforming the Commonwealth's current workforce development system.

Policy Strategy #1. Create a high-performance career development system built around the Workforce Investment Boards (WIBs).

The reform effort already underway recognizes many of the important components of a high-performance workforce and career development, including the role of the One-Stop Career Centers as part of a statewide development strategy. Currently, in Virginia, there are 22 workforce development and training programs that are administered by ten state agencies in three secretariats (i.e., Commerce and Trade, Education, and Health and Human Resources).³ The Governor's recent appointment in June 2003 of Dr. Barbara Bolin, Special Advisor to the Governor for Workforce Development, and the recently stated goal of developing a broader plan

³ The Joint Legislative Audit and Review Commission. *Review of Workforce Training in Virginia*. Commonwealth of Virginia, January 2003.

for workforce services restructuring in Virginia by September 1, 2003⁴ are likely part of a larger plan in Virginia to redesign the current workforce development system. The Governor, Dr. Bolin, and the Virginia Workforce Council all have important leadership roles to play as state-level coordinators of a revised workforce development system that is designed to eliminate duplication of services, leverage various funding sources, and coordinate the appropriate players (e.g., employers, Community Colleges, public and private programs, WIBs, One-Stop Centers, local elected officials, etc.).

Based on the discussions, reviews, and analyses we conducted, a strong role for the WIBs is appropriate. The Workforce Investment Act of 1998 (WIA) allows states and local WIBs considerable flexibility in designing the centers to best meet the local employment and training needs of incumbent workers and businesses. The 17 WIBs located throughout Virginia and the 44 One-Stop Career Centers provide a localized system of workforce training on which Virginia can build. While state-level organization is critical to the success of Virginia's workforce development system, ultimately it is the local- and regional-level structures and the nature of WIA that will ensure that Virginia's workers receive services tailored to their local labor market and the educational and training opportunities available in their community.

One-Stop Career Centers can also play more of a role in facilitating the employment of maturing and older workers over the next decade, by highlighting issues or approaches related to the aging workforce. For example, career centers might hold workshops for employers and older workers about post-retirement work options (including part-time work), or sponsor training for mature and older workers on using new computer technology. As noted under the following recommendations, the role of the One-Stops can be strengthened with continued attention to enhancing their capacity to link to emerging labor market needs and expanding their coordination with other agencies and programs.

Policy Strategy #2. Improve the link between training initiatives and specific occupations and industries, by better using labor market data on projected business need for labor.

In 2003, the General Assembly amended the Virginia Workforce Council statute to require that each local WIB develop an annual "Demand Plan" for its workforce investment area. Each Demand Plan is to be "based on a survey of local and regional businesses that reflects the local employers' needs and requirements and the availability of trained workers to meet those needs and requirements."⁵ The purpose of the Demand Plan is to identify the jobs and job skills needed by employers in each area.

The local Demand Plans in conjunction with the regional occupational projections available through the VEC provide a basis for local- and regional-level strategic planning on the future skill needs of local workers and businesses. These data may be used by local WIBs, workforce

⁴ This plan has not yet been made public and no release date has been issued.

⁵ Virginia Employment Commission. "Demand Planning Guidance." Approved by the Virginia Workforce Council on June 5, 2003. Richmond, VA: Virginia Employment Commission, June 5, 2003, p. 2.

career centers, and related employment, education, training, and economic development programs to better anticipate future occupational and labor market shifts.

Some moderate- and high-skilled occupations that are projected to expand over the next decade are similar in all (or most) parts of the state: general managers and health care workers. In addition, information technology occupations will continue to be important in several local areas (Charlottesville, Norfolk, Richmond, Roanoke, and Washington, DC). To fill these needs, local areas may need to attract workers with these skills or begin long-term training strategies aimed at increasing the number of workers in these occupations. State-level planning for training in these general high-demand occupations could ensure the highest quality training by coordinating workforce development programming with community colleges and other post-secondary education programs.

Occupations that are projected to grow vary across the 8 MSA and 4 non-MSA areas, and not all future jobs will require high skills. This means that both training needs and business needs should be tailored to each local labor market. The majority of the high-growth occupations, however, require only short-term on-the-job training. Demand for cashiers and salespersons is likely to remain high in all areas of the state. While these jobs generally have lower wages than higher-skilled jobs, local programs in regions facing layoffs and plant closings may want to consider these as short-term opportunities for unemployed or dislocated workers while they continue to search for better paying employment opportunities or receive new training.

Policy Strategy #3. Consider more industry- or occupation-specific sectoral training strategies to take advantage of economies of scale.

Sectoral training strategies are industry- or occupation-specific training, usually linked to a particular employer or cluster of employers, and often providing services that intervene between workers, job seekers, or trainees on one hand, and employers, firms, and industries on the other. Sectoral training may result in major economic efficiencies since incumbent workers are trained for jobs that employers say are in demand, and training programs and firms benefit from economies of scale (since they can sometimes pool training resources).

Sectoral training strategies may be particularly relevant for (1) small training entities in Virginia including public training providers and small businesses, and (2) in less populated regions of Virginia where the numbers of potential or current workers and/or businesses are small. A small or medium-sized business, may benefit from collaborating with other businesses in a similar industry to sponsor training for a particular occupation or skill (e.g., computer applications). For example, a small retail business may be interested in computerized accounting training for five employees. By joining with other small retailers with a similar need for training in computerized accounting, it might be more affordable to hire a trainer or contract for customized training. Likewise, a public training provider such as a community college may reduce its training costs by providing incumbent training to a group of small employers rather than to a single employer.

Less populous regions of Virginia may have special sectoral training opportunities. For example, in Southwest Virginia, managers of human resource divisions from many different employers and industries meet periodically to discuss issues related to incumbent worker

training, among other things. They might expand their interaction to include considering the benefits of jointly sponsoring incumbent worker training.

Policy Strategy #4. Encourage more partnerships between Virginia’s community colleges, employers, and other training providers.

Skills and educational opportunities are offered through various public and private entities, including not only traditional education institutions, but also local One-Stop Career Centers, employers, and community-based organizations (CBOs). Stronger community college partnerships with various providers may contribute to the development of regional strategies that would elevate the overall education and training level of Virginia as a whole.

Virginia’s Community College System is a critical element in increasing the average educational attainment of Virginians. Community colleges represent an affordable, flexible option for adults of various educational backgrounds and skill levels. For many, a return to education means first acquiring basic skills—through Adult Basic Education, English as a Second Language, or General Educational Development programs—necessary to enroll in a credentialing program or college-level courses. For others, who may already be college-ready, the community college system is an affordable option that provides flexible class schedules for incumbent workers with families or other obligations. Regions of Virginia with lower levels of educational attainment could benefit from local- and regional-level policies aimed at increasing educational attainment.

Linkages with community colleges can be important for employers, One-Stop centers, and other community programs. Linkages between community colleges and employers, as discussed at our Abingdon forum, may be beneficial for both employers and incumbent workers. One employer in Southwest Virginia described the customized training for employees provided by the local community college as a very important resource that provides on-the-job training to incumbent workers. Similarly, CBOs operating either employment or social services programs may benefit from linkages to community colleges that provide an array of training programs for their participants and a source of professional remedial education services.⁶ And community college partnerships with local career centers are also mutually beneficial since the centers can help leverage resources to help pay for training at the community colleges (e.g., by accessing individual training accounts).

Community colleges, CBOs, employers, local career centers, and other potential partners all can be important in developing a regional workforce development strategy because they each have special expertise and perspective related to the of the current skills and education of incumbent workers and the training and skills that are likely to be in demand in the future. While these partnerships may already exist to some extent in Virginia, continued and expanded collaborations will further enhance the skills and education of incumbent workers.

⁶ Richard Kazis and Marty Liebowitz. “Opening Doors to Earning Credentials—Changing Courses: Instructional Innovations That Help Low-Income Students Succeed in Community College.” New York, NY: MDRC, July 2003.

Policy Strategy #5. Identify untapped human capital, particularly among mature and older workers, and invest in their skills development.

In local areas that may have difficulty meeting employers' demands for workers, mature and older persons may be an important untapped source of labor. The aging of baby-boomers will likely lower the labor force participation rates in Virginia over the next decade, without active policy intervention. The trend could be somewhat mitigated, however, if baby-boomers are encouraged to seek paid employment following retirement. As more Virginians reach retirement age in the coming years, workforce development policies such as phased retirement, job sharing, reduced work schedules, and rehiring retired workers on a part-time basis could be designed to keep some retirement-age workers on the job.⁷ Our analysis suggests that phased retirement, job sharing, and working after retirement, particularly part-time, are all options that are amenable to Virginia's workers.

State officials can also play a critical role in helping the public and private systems understand and incorporate the aging trend in the population. For example, statewide conferences or workshops might be held on issues such as post-retirement employment issues, computer training for mature workers, or the costs and benefits to businesses of employing older workers.

Policy Strategy #6. Incorporate ongoing long-term support services for low-skilled, disadvantaged workers to increase the overall skills and productivity of Virginia's workers.

In addition to workers who are consistently employed, the labor market includes a large number of workers who are just entering the job market, or who cycle in and out of the job market. Many of these are lower-skilled workers with limited education who are often underemployed or unemployed, new entrants to the job market, or persons transitioning from welfare to work.

To increase the overall skills and productivity of Virginia's workforce, publicly-funded workforce development programs should embrace upgrading the skills of low-income individuals to increase their success in the workforce. Policymakers interested in helping move individuals out of poverty, may want to incorporate job retention and career advancement strategies into job-preparation, job search, and job training programs.⁸

To improve the career advancement opportunities for low-skilled workers, Virginia's One-Stop Career Centers may want to sponsor or facilitate training and education opportunities that are sufficiently flexible, accessible, and meet the short-term time horizons of lower-paid workers. In addition, tuition reimbursement used for programs to enhance training may need to be more

⁷ Patrick J. Purcell. "Older Workers: Employment and Retirement Trends." Congressional Research Service, Report for Congress. Washington, DC: Congressional Research Service, The Library of Congress, October 2003.

⁸ Demetra Smith Nightingale, "Work Opportunities for People Leaving Welfare," Chapter 6 in *Welfare Reform: The Next Act*, edited by Alan Weil and Kenneth Finegold, Washington, DC: Urban Institute Press, 2002.

easily accessible to lower-paid workers. Finally, employers can also play a role in improving the career advancement opportunities or accessibility of training for low-skilled workers by allowing their workers to attend training during work hours or to make up lost work hours.⁹

Conclusion

Based on our analyses, these six interrelated strategies could form a framework for improving the overall skills and productivity of Virginia's workforce and strengthening regional workforce development programming. The success of these strategies depends on local- and regional-level collaborations among workforce development providers, employers, educators, and policymakers who are knowledgeable about the unique and changing demographic and workforce trends in each of Virginia's regions. State-level leadership will be critical both in making cross-agency and cross-program collaboration a priority, and in maintaining and updating critical labor market and demographic data and ensuring that data are readily accessible by planners at the state, regional, and local levels to routinely integrate an understanding of both current conditions and future projections.

⁹ Nancy Pindus, Daryl Dyer, Caroline Ratcliffe, John Trutko, and Kellie Isbell. *Industry and Cross-Industry Worker Mobility: Experiences, Trends, and Opportunities for Low-Wage Workers in Health Care, Hospitality, and Child Care*. Washington, DC: The Urban Institute, December 1997.

I. Introduction and Objectives

This study, conducted by The Urban Institute, was commissioned by the Virginia Workforce Council. The Virginia Workforce Council was created in 1999 as a policy body to assist the Governor in meeting workforce training needs in the Commonwealth. The Virginia Workforce Council's (VWC) vision is:

“...to have and promote a well-trained, well-educated, highly skilled and qualified workforce that understands and meets the needs of employers and that is actively engaged in lifelong learning.”¹⁰

This study provides the VWC with information to help them make important incumbent worker policy decisions over the next several years. Major economic transformations are underway in the Commonwealth of Virginia and nationwide in terms of the changing demand for workers by businesses and the changing characteristics of the workforce. As the Commonwealth prepares for the workforce development and economic development challenges over the next few decades, the results of this study will contribute to an ongoing examination in Virginia of the various short- and long-term policy and programmatic strategies that can ensure a skilled, stable, and productive workforce to meet the changing demographic characteristics and business needs of the future.

Background and Policy Context

Recent demographic, economic, and state and federal policy developments have created a new set of challenges and opportunities for employers and workforce development programs. The aging of the post-World War II baby-boom generation is changing the characteristics of Virginia's and the Nation's workforce, meaning there are now more maturing and older workers than in the past. This aging trend will continue for another two decades, during which there are likely to be both more older workers and more retiring workers. The aging “boom” also has implications for the labor market because of the increased demand for certain types of services or needs, such as medical and health care, retirement communities and associated sectors. Some local areas, such as Northern Virginia, also continue to experience an increase in the immigrant population, who have high labor force participant rates.

¹⁰ Virginia Employment Commission. Virginia Workforce Council website at <http://www.vec.state.va.us/vecportal/vwc/> (Accessed September 20, 2003).

In addition, the structure of the economy has changed in Virginia and elsewhere, with decreasing demand for workers in the manufacturing sector, increasing employment in the service sector, and more demand generally for workers with technological skills. Within Virginia, for example, the health and medical sector is a major employer in almost every local workforce investment area; and many areas have high employment in the retail sector, particularly in large companies such as Wal-Mart. Health care and retail are likely to continue to be strong growth sectors. Local areas, such as southwestern Virginia, with relatively more dependence on manufacturing, mining, and agriculture, however, may face special challenges over the next decade since employment in some traditional manufacturing industries is likely to continue declining even though there may be increases in some technological sectors. Some important segments of Virginia's economy, of course, remain strong and will continue to be critical in the future—the defense and military sector, for example, is the main source of jobs in the Hampton Roads and Norfolk areas, and government employment (federal, state, and local) is critical in most areas (especially northern and central Virginia).

State policy developments that have created new opportunities for Virginia's workforce development system include the active role of the Virginia Workforce Council and several initiatives spearheaded by current Governor Mark R. Warner. Since its inception in 1999, the Virginia Workforce Council has worked to gain perspective on the ongoing issue of a trained workforce with skills matched to the needs of employers. To that end, the Council convened a Workforce Roundtable May 15, 2001 including participants from state agencies and research institutions. In addition to substantive findings, the Workforce Roundtable report recommended that a study be conducted to examine aging and incumbent workers in Virginia. The Virginia Workforce Council approved this recommendation in spring 2002, and this study addresses the Roundtable's recommendations.

After his inauguration in January 2002, Governor Mark Warner placed reforming the educational opportunities and the workforce development system high on his agenda. In spring 2003, Governor Warner signed House Bill 2075, which includes a directive to each local Workforce Investment Board to prepare an annual workforce needs assessment or "Demand Plan" identifying employment opportunities and skills that are or may be needed in that region of the state. Some of the additional executive actions taken by Governor Warner to reform the workforce development system in Virginia include:

- Appointment of a high level Coordinator for Workforce Development (Dr. Barbara Bolin, Special Advisor to the Governor for Workforce Development, was appointed June 17, 2003);

- Development of a broader plan for workforce services restructuring by September 1, 2003;¹¹
- Creation of a “Middle College” within the Virginia Community College System directed at young adults who have not graduated from high school;
- Directing the Virginia Employment Commission to develop new performance measures and accountability standards for local Workforce Investment Boards (WIBs) and One-Stop Career Centers; and
- Streamlining administration across workforce programs, for example, the VEC is required to use the Workforce Demand Plan to develop unified service plans.¹²

On the federal policy side, the Workforce Investment Act (WIA) of 1998 dramatically altered the nature and mission of public employment and training policies and programs, providing further opportunity for Virginia to reform its systems. One major change introduced by WIA is the development of a One-Stop Career Center system of universal services to both employers and job seekers. The flexibility afforded to local Workforce Investment Boards by WIA, and the importance of linking workforce development with economic development provides opportunities to integrate planning. WIA is scheduled for reauthorization by Congress in late 2003, and that may involve further changes to program structures and priorities. Meanwhile, other federal policy shifts also affect the general characteristics of workers and potential workers. Federal welfare reform legislation in 1996, for example, included an increased emphasis on work requirements, moving more recipients off the rolls and into regular permanent employment. Like WIA, the national welfare legislation related to the Temporary Assistance for Needy Families (TANF) is due for Congressional reauthorization this year. Similarly, federal policies for persons receiving disability assistance also are increasingly emphasizing helping individuals with disabilities move back into the workforce.

Together, these demographic, economic, and state and federal policy changes have substantially altered the profile of the workforce and the labor market, potentially creating a new set of demands on both employers and workforce development systems to address the employment and training needs of a changing workforce.

¹¹ This plan has not been made public and no release date has been set.

¹² Official Site of the Governor of Virginia. Press Release “*Governor Warner Signs Workforce Development Legislation—Reforms Bring a 21st Century Approach to Workforce Development.*” Located at http://www.governor.virginia.edu/Press_Policy/Releases/2003/Mar03/0327b.htm (Accessed on October 2, 2003), March 27, 2003.

Study Objectives

It is within this context that this study provides information to the Virginia Workforce Council that can be useful in making important policy decisions over the next several years, taking account of demographic, labor market and state and federal policy changes. There are four general objectives for this study:

- *Analyze the current and changing demographic characteristics of Virginia's workforce*, including how the aging of the population and workers fits into the trends (e.g., understanding the supply side of the workforce). Also, examine characteristics of Virginians including current skills, desired future training, quality of life issues, benefits, retirement, and workplace environment issues as well as their interest in phased retirement and job sharing.
- *Examine the trends in workforce demand* in future years, especially in terms of occupations that are expected to grow or decline and the skills that will be in demand (e.g., examine the future demand side of the labor market).
- *Identify policies, approaches and strategies that exist in Virginia and elsewhere for integrating emerging and diverse groups into the workforce* and that might be appropriate for public agencies, programs, and businesses to consider (e.g., identify potential "best practices").
- *Recommend alternative public and private sector policies and strategies* that might be appropriate for Virginia in the coming decades (including short-term and longer-term strategies, and public and private sector approaches, new skills that can be anticipated, special strategies for certain groups of workers).

Study Components

In order to accomplish the four study objectives, four study activities were carried out over a six-month period from mid-May to mid-November 2003:

- *Analysis of existing data and statistics on demographic and workforce trends* in Virginia;
- *A telephone survey of a random sample of 1,004 Virginians* by The Gallup Organization under a subcontract from The Urban Institute;
- *Three forums with local and national representatives of workforce development programs and the business community* (in Richmond and Abingdon, Virginia and in Washington, DC); and
- *A review of the relevant literature to identify best practices, approaches, and strategies* that exist in Virginia and elsewhere for improving the overall skills and training of incumbent workers and integrating diverse groups into the changing workforce.

Analysis of Existing Data. The demographic and workforce trend analysis examines several aspects of the aging and incumbent workforce in the Commonwealth of Virginia using existing secondary data from the VEC, the U.S. Bureau of Labor Statistics, and the 1990 and 2000 Decennial Census data from U.S. Census Bureau. First, we examine demographic trends statewide, including trends in educational attainment, race/ethnicity, and gender of workers and potential workers. These analyses are completed for the state as a whole and for 8 Metropolitan Statistical Areas (MSAs) and 4 non-MSA areas in Virginia.¹³ The analysis describes the current demographics and how characteristics have changed over the 1990s. We also discuss potential demographic and labor force trends over the next five years. This information provides context for better understanding Virginia's statewide labor market and the local labor markets within Virginia.

Second, an analysis of Virginia's labor market, focusing on expected labor market changes over the next five years is presented. We begin by presenting a brief overview of Virginia's labor markets in terms of labor force participation rates, employment rates, and unemployment rates. We then examine the extent to which the demand for workers by employers and the supply of workers (i.e., persons who want a job) is expected to match up in the coming years. We also examine specific occupations and identify occupations that are projected to have the largest increase in the demand for workers over the next five years and occupations that are projected to decline. Finally, the skills required by workers to carry out the jobs available over the next five years and the extent to which additional formal education or on-the-job training is likely to be necessary for Virginia to meet employers' demands five years down the road is discussed.

Telephone Survey. The telephone survey of Virginians was conducted by The Gallup Organization under a subcontract from The Urban Institute. The survey provides primary data on the characteristics of workers and non-workers, their current skills and future training needs and preferences, opinions about employment benefits, workplace environment, phased retirement and job sharing, and information about quality of life issues. In addition, the survey provides information about occupations, household income, and the demographic characteristics of

¹³ Information about the counties and cities included in each MSA and non-MSA area is presented in Appendix A and are discussed in more detail below.

Virginians. The survey results are reported for Virginia as a whole, by age group, and by region¹⁴ when the sample sizes are sufficient to support such an analysis.

The 12-minute survey was conducted with a representative sample of 1,004 individuals in the non-institutionalized adult population age 18-65 residing in Virginia (see Appendix C for detailed survey methodology on sampling and weighting and Appendix D for the final survey instrument). The survey data collected were weighted by Gallup by the seven regions, race/ethnicity, age, and gender, and are representative of the approximately 4.6 million Virginians between ages 18 and 65.

Conduct Three Forums. Three forums were conducted with local and national representatives of agencies and programs in the workforce development system and the business community in Richmond and Abingdon, Virginia and in Washington, DC, during August and September of 2003. The discussion in the forums focused on both perceptions about changes in the labor market and worker demand, variations across regions of the state, and strategies that seem to be particularly effective or promising in public workforce development programs or in the workplace to enhance worker productivity. The discussions about workforce needs in these sessions complement the statistical analysis of occupational and industry trends.

The two-hour forums were each attended by 7-20 knowledgeable individuals representing Workforce Investment Boards, the VEC and other relevant state agencies (e.g., economic development, vocational rehabilitation), other public and private programs serving incumbent workers (e.g., community colleges, community-based organizations, older worker programs), and the Virginia Workforce Council as well as business leaders (see Appendix E for a complete list of attendees). The forums in Richmond and Abingdon focused on state and local circumstances in order to understand the needs of different regions, industrial sectors, and business types. In particular, the Abingdon forum identified issues specific to Southwestern Virginia, given its unique regional conditions and trends. The Washington, DC forum engaged national policy and business representatives as well as some Virginia representatives to discuss successful practices for upgrading the skills and education of incumbent workers. The forums, in

¹⁴ The seven regions of Virginia used for the survey data analyses were constructed as part of the data sampling strategy and were not designed to represent the 8 MSA and 4 non-MSA areas mentioned above. Information about the counties and cities included in each of the seven regions is presented in Appendix B are discussed in more detail below.

combination with the data analysis on the workforce and labor market and the literature review, provide the basis for best practices recommendations for Virginia to consider.

Review of the Relevant Literature. In order to understand how Virginia workforce development programs might best serve the workforce and workplace of the future, existing literature about successful employment and training and workplace strategies designed to improve overall economic productivity was examined. The literature review includes studies in Virginia and elsewhere about programs serving incumbent workers, dislocated workers, new labor force entrants (e.g., young workers), as well as programs serving older workers, and incumbent workers with special needs or conditions. The review also includes reports on workplace-based strategies appropriate for different workers, including those that involve training strategies and work arrangements for mature and older workers, skills upgrading for incumbent workers, and special initiatives in targeted industrial sectors. The insights obtained from the literature are synthesized with findings from other components of the study to recommend policy and program options Virginia officials might wish to consider.

Structure of the Report

Section II of the report examines the relevant literature on what is known about best practices for incumbent workers from Virginia and elsewhere. Section III presents the population demographic trends in Virginia as a whole and for each of the 8 MSA and 4 non-MSA areas. Section IV provides information about Virginia's labor market describing the trends in demand for workers by employers and the supply of workers and occupations that are projected to grow and decline over the next five years by MSA and non-MSA area. The findings from the three forums are also discussed in this section. Section V discusses the results from the survey of Virginians, describing the characteristics of workers and non-workers, workers' current skills and future desire for training, and various other issues related to training, benefits, workplace environment, quality of life, and retirement. Section VI synthesizes the information presented in the prior sections and presents strategic policy recommendations for improving the skills and training of incumbent workers in Virginia.

II. Literature and Research on Promising Practices

Virginia is currently in the process of reviewing its workforce and training policies and programs to ensure that the emerging system effectively and efficiently develops and maintains a quality workforce to sustain and improve economic development. To contribute knowledge to ongoing policy development, this chapter synthesizes existing information and research—from Virginia and elsewhere—about potentially promising strategies and best practices in high quality workforce development programs.

The review is based on selected literature and research, particularly related to integrating diverse groups of workers into the workforce and investing in upgrading the skills of incumbent workers. The objective is to identify potential strategies that appear to be most promising in ensuring a high-performance workforce development system and a high quality and productive workforce for the future. Many of the strategies and approaches are already being implemented or considered in Virginia; others may prove useful for future consideration. This literature review is designed to highlight key workforce challenges and some of the more promising strategies and approaches that currently are being implemented around the country.

The quality of the overall future workforce will be improved by increasing the skills and employability of current and potential workers; that is by both upgrading existing human capital and fully utilizing potential human capital. Relevant research in four areas offers insight: (1) strategies for upgrading skills of incumbent workers, (2) strategies for efficiently employing and improving the employability of low-skilled workers, (3) promising approaches for special groups of workers such as those who are aging and those permanently displaced from their jobs, and (4) management strategies that improve program performance.

A few underlying themes emerge from the research. First, there is growing evidence that the best training, employment, and worker development strategies are those closely linked to the businesses and industries that hire the workers. Second, there are many special underutilized groups of workers (e.g., older workers, dislocated workers) who can, with special attention be more productively employed. Third, some low-skilled workers (e.g., welfare recipients, limited English speakers, youth just entering the workforce) may need worker supports to be successfully employed. Finally, there is emerging experience in the workforce development system about potentially promising ways to manage, structure, and deliver services to workers and businesses.

Strategies for Serving Incumbent Workers

One workforce policy issue at the national level and in Virginia and most other states concerns the increasing demand for higher-skilled workers. The nation's economy has undergone substantial change as it shifts from a manufacturing base that consisted of many semi-skilled and low-skilled occupations to a services and communications base requiring more skilled workers—particularly those with technological and computer skills. Along with that industrial shift, there is recognition that the skills and education levels of many current (i.e., incumbent) workers have not kept pace with the technological changes in businesses.

The types of training or skills development incumbent workers need is potentially broad, and includes occupation-specific or firm-specific training, as well as, remedial basic education (e.g, reading, math, English, writing), and basic work skills (e.g, computer applications). In addition, some workers are deficient in certain personal areas considered important in the workplace, that are often called “soft skills”—such as interpersonal skills, teamwork, self-discipline, problem solving, and time management.

Providing incumbent workers with training or retraining can involve public programs, private businesses, or collaborations between public and private entities. Regardless of the funding source or delivery method, the training is intended to improve and update workers' skills. From a business perspective, skills upgrading helps firms meet new market demands, and investing in training should increase firm productivity. At the same time, of course, workers themselves receive important positive benefits from training: they become more marketable, their career development potential improves, and they may receive wage increases as they acquire new skills.

Important Positive Evidence about OJT. An accumulation of research over the past thirty years indicates that training that is directly linked to the workplace and specific occupations is particularly effective, whether it is sponsored and funded by the business or whether it is publicly-funded. Public workforce development policy, for example, has traditionally involved a range of training strategies, one of which is On-the-Job Training (OJT), where businesses receive a wage subsidy for a certain portion of their labor costs for certain entry level workers. Research

consistently finds that OJT for disadvantaged individuals, including welfare recipients and low-skilled men, has positive outcomes in terms of increased employment and earnings.¹⁵

The results for stand-alone vocational training are less positive, perhaps because training is often too detached from real demands and needs of businesses, or because the quality of the training is not adequate (e.g., using out-of-date technology or equipment). The ongoing reform of the secondary and post-secondary education system to better articulate instruction and programs to meet the emerging needs of the labor market and the limitations of past training that may have been appropriate for a manufacturing based economy, but, is less effective given the vast technological advances.

Continuous Learning and Retraining. One implication of the rapid industrial and technological change is that continuous learning and training are now considered critical. Individuals can no longer assume that they will complete their formal education (e.g., high school, college, or vocational school), enter the labor force, and never again go to school. Instead, workers engage in ongoing and continuous learning, either on-the-job as noted above, or in formal educational programs. For example, enrollment in traditional community colleges and in on-line educational programs now increasingly consists of adults, with the average student age in community colleges above 20 years old.

However, experience also indicates that it is often difficult to encourage continuous learning. There are many constraints, including the difficulty in finding time to attend classes, the cost of tuition, transportation to institutions, identifying the types of training that are likely to “pay off” in the end, and determining the quality of training institutions and programs. An Urban Institute study of the feasibility of a large-scale national initiative on continuous learning found that the most serious barrier to life-long learning is the time commitment required, especially for individuals with families and the challenges they have in balancing family, work, and school demands.¹⁶ That study also found that some of the more promising approaches are those linked to or supported by employers. Some businesses allow workers time off during work hours to attend courses—some employers provide paid time-off, others share the cost of the time

¹⁵ Nudelman, Jodi. “The Impact of Job Training Partnership Act Program for Adult Welfare Recipients,” Chapter 4 in *Improving the Odds: Increasing the Effectiveness of Publicly-Funded Training*, edited by Burt S. Barnow and Christopher King, Washington, DC: The Urban Institute Press, 2000.

¹⁶ Laudan Y. Aron and Demetra Smith Nightingale, “Incumbent Workers’ Views about Lifelong Learning: Findings from Baltimore Area Focus Groups,” Report to the U.S. Department of Labor, The Urban Institute, 1996.

in training with the employer. Training can be more accessible and less time-intensive when classes are held at the workplace before or after working hours. Some community colleges, for example, hold classes at the worksite, either through regular tuition-paying programs or through customized training programs developed for or with the employing firm.¹⁷

Promising Potential of Sectoral Strategies. In the last two decades there has been more emphasis on what are currently termed “sectoral” strategies for job training and workforce development. While there is not a consistent definition of sectoral training, it usually refers to industry-specific or occupation-specific training, usually linked to a particular employer or cluster of employers, and often providing services that intervene between workers, job seekers, or trainees on one hand, and employers, firms and industries on the other. Supporters of a sectoral model claim that major economic efficiencies result since individuals are trained for jobs that employers say are in demand, programs and firms benefit from economies of scale (since they can sometimes pool training resources).

Elliott and King (1999)¹⁸ found that successful sectoral programs have the following features:

- Training programs are targeted to an occupation or cluster of occupations within an industry or sector of the economy;
- Programs seek to become an influential actor in that sector (e.g., staff are considered experts about businesses and occupations in a particular industry); and
- Programs intervene on behalf of workers, especially low-income workers, by helping them identify career ladders, or make informed decisions about changing jobs.

One example of a local agency that follows a sectoral approach is the Wisconsin Regional Training Partnership (WRTP), which consists of dozens of firms in the Milwaukee area (e.g., metalworking industry, printing, health care institutions). The WRTP, with heavy input from their industry partners, has developed training in three areas: incumbent workers training, modernization, and future workforce development. A variety of types of training programs are operated, including certification based programs, and all training is linked directly to particular

¹⁷ Richard Kazis and Marc S. Miller eds. *Low-Wage Workers in the New Economy*. Washington, DC: The Urban Institute, 2001.

¹⁸ Mark Elliott and Elizabeth King. *Labor Market Leverage: Sectoral Employment Field Report*. Philadelphia, PA: Public/Private Ventures, 1999.

occupations and jobs based on employer input. By customizing the training to the demand in the labor market, early outcomes are quite promising in terms of employment and job retention.

High-Skills Training. With special funding from the fees paid by employers importing foreign workers with H-1B visas, the U.S. Department of Labor awarded grants to several dozen projects around the country to operate projects to provide technical training for US workers to increase the pool of workers in demand in the economy. A review of a sample of the H1-B projects suggests a number of common features of successful high-skills training:¹⁹

- Focus on *incumbent worker training*, rather than training individuals who would be newly hired. Employers felt this was what they most needed to remain competitive in their market, and therefore, many were also willing to contribute funds to the project.
- Emphasize *business or industry expertise*. Projects were expected to implement very quickly, meaning the projects tended to work with industries and employers with which they had some experience. Having training staff who are knowledgeable about the target industry improves credibility with employers.
- Target *occupations in high demand*, where there is a shortage of qualified job candidates. The federal grants were to be used to target high-demand occupations, and this focus also was important to obtaining employer participation.
- *Adapt available curricula*. While some new curricula materials were developed in some projects, it is clear that many businesses, training institutions, and industry organizations already have adequate and high-quality curricula. Rather than reinventing new curricula, it is important to identify and use good material that already has been developed.
- Use *multiple sources of funds*. While the DOL grants were the primary source of funds, programs tended to use that to leverage other sources, including private firm contributions, foundation grants, WIA funds, and resources available through community colleges when they were involved.

The following three examples describe strategies used in designing high-skills training projects for specific industries. All examples are taken from Barnow, Kaiser and Trutko 2002. The first highlights how a group of hospitals collaborated in training because of their shared, severe shortage of nurses. The second describes how an industry review board was used to ensure that the training project's curriculum quality was appropriate. The third example summarizes a web-based training project developed collaboratively by a community college, an employer, and the local Workforce Investment Board:

¹⁹ Burt S. Barnow, Joyce Kaiser, and John Trutko. *Exemplary Practices in High-Skill U.S. Department of Labor H-1B Training Programs*, Bethesda, MD; Coffey Communications, LLC, 2002.

- “The situation in Vermont hospitals in regard to nurse shortages was critical and appeared to be getting worse. In the case of health care, having several small hospitals unable to serve critical care patients or support physicians in the operating room only resulted in increased demand for those services at larger hospitals and in a potential deterioration in care of those who needed it the most. To overcome this statewide problem, employers, educators, training professionals, state officials, associations, and other health care organizations had to come together to find a solution or they would all suffer. The grantee enlisted the aid of the Vermont Association of Hospitals and Health Systems and together they shared information on the H1-B training solicitation with all interested parties. They were able to overcome resistance to the training initiative by explaining program benefits to each hospital and the community and developing solutions to such problems as employee retention upon the completion of training.”
- “There was consensus in Alaska among the officials who developed the H1-B project that training case managers did not have the technical expertise to evaluate participant readiness for information technology training, nor were staff able to determine whether the course of study proposed by the trainee or employer was appropriate under H-1B definitions or the current labor market. For this reason, when a participant did not have a demonstrated skills or educational background in IT, his or her file was submitted to the Alaska High Tech Business Council for assessment. This careful screening minimized the number of participants dropping out of the program due to their inability to complete the required coursework, and staff expected this would increase employment success for those who were trained.”
- “The Springfield area regional employment board sponsors training at one employer site (JDS Uniphase), whereby the training is provided to incumbent workers via the Internet. Participants are enrolled in college credit courses through the Springfield Technical Community College. Lecture notes and homework assignments are disseminated over the Internet, so the participants can learn the material when it is most convenient for them. The firm has made laboratory facilities available, so that individuals involved in the training can complete required laboratory assignments without traveling to the community college campus.”

Strategies for Low-Skilled Workers

In addition to workers who are regularly employed, the labor market includes a large number of workers who are just entering the job market, or who cycle in and out of the job market. Many of these are lower-skilled workers with limited experience. A critical mission of publicly-funded workforce development programs involves preparing, training, and upgrading the skills of individuals with low skills including: (1) those who are disadvantaged and often chronically unemployed or underemployed, (2) new entrants to the job market, and (3) persons transitioning from welfare to work.

There are two reasons that public policy focuses on improving the employability of those with low skills. First, there is a social rationale—their well-being and that of their families and children will improve if their earnings and income increase. Second, improving the skills of new workers as well as the skills of incumbent workers, should, in theory, help increase productivity and raise the expected standards of workers in general. Over time, if there is enough of an increase in worker skills, then productivity and, presumably wages, should increase, thus benefiting both firms and workers.

Job Retention and Advancement. A number of findings can be drawn from the large body of research on employment programs for welfare recipients and other economically disadvantaged individuals. First, given the relatively strong economy in the U.S., many people can find work if they are willing to work. Second, the real challenge is helping them retain jobs. Third, even if they are able to find and retain work, many low-skilled workers remain poor. A consensus is emerging among program operators and researchers that employment programs for the disadvantaged should do more than simply move individuals quickly into jobs, and often, more than implementing a traditional occupational training course. If policymakers are interested in helping move individuals out of poverty (and not just into the labor market), then it is important to also incorporate job retention and, ideally, career advancement strategies into job-preparation, job search, and job training programs.²⁰

This has been a difficult challenge. Demonstrations in the mid-1990s aimed at providing post-employment services to individuals to help improve job retention found that those services had no significant effect on continued employment, wages, or reduction of welfare.²¹ Programs tended to provide retention services by conducting regular weekly or monthly follow-up calls to individuals once they start working, some scheduled support groups and workshops at night or on weekends to help support new workers, or provided mentors who maintain contact over time. The results were disappointing, in part because of work and firm limitations, and in part because of the severity of worker problems. Therefore, in developing the next generation of demonstrations, now being evaluated,²² programs are incorporating services designed to help

²⁰ Demetra Smith Nightingale, “Work Opportunities for People Leaving Welfare,” Chapter 6 in *Welfare Reform: The Next Act*, edited by Alan Weil and Kenneth Finegold, Washington, DC: Urban Institute Press, 2002.

²¹ Anu Rangarajan, Peter Schochet, and Dexter Chu, *Targeting Employment Services for Welfare Recipients*. Princeton, NJ: Mathematica Policy Research, 2002.

²² The latest experiments testing retention and advancement strategies are being developed and evaluated by MDRC.

retention early-on in the job training and employment programs before individuals start a job, and to continue to provide services post-employment as well. Occupational training and pre-employment programs, for example, can include modules on the importance of time management, balancing work and family responsibilities, and crisis management.

There is also growing evidence that post-employment services can be as important to businesses as they are to individuals. In programs that received federal funding under the Welfare-to-Work Grants Program, for instance, many developed employer partnerships, where businesses were directly involved in designing the pre-employment curriculum and often made commitments to hire those who successfully completed the training. Some employers indicated that they became more satisfied with public employment programs because there was someone who could intervene when work or personal problems arise on the job with new workers. In some partnership programs, staff were assigned to be business liaisons (i.e., staff who have experience in the industries involved) and other staff were participant liaisons (i.e., staff who have experience brokering social and supportive services for individuals and families).²³

Career Ladders. Companies generally investing more for skills development and career advancement for higher paid, managerial workers. Research has found that skills training is not as high a priority for lower-paid workers. In contrast to the training feedback provided to higher-level workers, training provided to lower-paid workers is treated as a routine requirement rather than a reward for accomplishment. Pindus et al. (1997), suggest several public and private strategies that, with incentives from the government, could improve the career advancement opportunities for low-skilled workers.²⁴

- Employers should offer training and education opportunities that are sufficiently flexible, accessible, and meet the short-term time horizons of lower-paid workers. Workers need to see how they can make incremental improvements in their skills and qualifications which will contribute to job advancement and increased pay over a relatively short period of time. Ensure that workers are aware of job openings and the skills needed to be considered for openings.
- Tuition reimbursement programs — one of the vehicles for workers to obtain enhanced training — need to be made more easily accessible to lower-paid workers. Two changes

²³ Demetra Smith Nightingale, Nancy Pindus, and John Trutko. “The Implementation of Welfare-to-Work Grant Program.” Washington, DC: The Urban Institute, June 2002.

²⁴ Pindus, Nancy, Daryl Dyer, Caroline Ratcliffe, John Trutko, and Kellie Isbell. *Industry and Cross-Industry Worker Mobility: Experiences, Trends, and Opportunities for Low-Wage Workers in Health Care, Hospitality, and Child Care.* Washington, DC: The Urban Institute, 1997.

would be most helpful: (1) reduce the amount of out-of-pocket costs on the front-end and (2) allow workers to attend training during work hours or to make up lost work hours.

Services for Special Populations

Another category of workers that could be more productively employed consist of maturing and older workers, including many who have been displaced from their regular jobs for various reasons (e.g., plant closings, firm relocation, foreign competition). When the structure of the labor market undergoes major change, as is currently the case in the shift from a manufacturing base to a technological base, the incidence of worker dislocation is high. Younger and better-educated workers tend to become reemployed fairly quickly; older and less educated workers have more difficulty finding new jobs and gaining new skills. Coincident with the current industrial shift, is one of the most dramatic demographic trends in this nation's history—the aging of the post-World War II baby-boom generation.²⁵

The results of these two developments are, first, that there are some important sources of untapped (or under-tapped) human capital, and second, that for at least two more decades, there will be an increase in the total number of older workers and in the number of older workers who require special support in the form of income and services. Based on historic participation, one can anticipate that the number of persons 45 and older seeking services from workforce development programs and One-Stop Centers could double in the next decade. While this cohort is more highly educated than past generations, about 12 percent still have not completed high school or received a GED, and most of those with limited education have incomes below the poverty level. The sheer size of the cohort means that there will be a considerable increase in the number of poor older persons with limited education. Several strategies have been suggested that the workforce development system might consider to prepare for the aging of the workforce and take early action, rather than wait until it becomes a programmatic crisis:²⁶

- The workforce development system should re-examine current service delivery approaches to assure that strategies are appropriate for older workers. For example, promising approaches include work experience/community service and small group instruction (rather than large classroom settings).

²⁵ Stacy Poulos and Demetra Smith Nightingale. "Employment and Training Policy Implications of the Aging Baby Boom Generation." U.S. Department of Labor, Monograph, June 1997.

²⁶ Fredrica Kramer and Demetra Smith Nightingale *Implications of Aging Baby Boomers in a New Workforce Development System*, Washington, DC: The Urban Institute, December 1999.

- Prepare for a particularly large increased need for employment-related services by persons between the ages of 45 and 54, a population not currently eligible for special federal older worker programs until they are 55 years old.
- Policymakers should consider ways to also leverage both public and private resources to minimize the number of older baby boomers who need extra public support, for example, by encouraging more flexible combinations of work and retirement; and to maximize the productive activity that this generation can continue to provide well into their sixties and beyond (e.g., by encouraging and channeling more voluntarism and community service).

Program Management Strategies

The enactment of the Workforce Investment Act (WIA) increased the pace at which high-quality One-Stop Career Centers were being developed nationwide, given the requirement in the act that each locality have at least one such center. The intent of the One-Stop system is to provide all workers and all employers (i.e., “universal”) access to information, programs, and services. In some places, all mandated programs listed in the Act are physically located in one facility; in others there are networks of Career Centers where customers can access information about all partnering agencies and programs. In most places, like Virginia, electronic resources are an integral part of the system, although electronic approaches are still in their early stages of development.

Exemplary One-Stop Features. Studies of the implementation of One-Stop Centers suggests that exemplary facilities follow what Barnow and Gubits (2002) refer to as “common sense” practices, including:²⁷

- Locating centers in places that are easily accessible by public transportation and by automobile;
- Designing centers so customers can easily find their way around and access the services they desire;
- Providing adequate and up-to-date Internet and computer facilities;
- Making centers accessible to persons with disabilities;
- Friendly appearance;

²⁷ Burt S. Barnow and Daniel B. Gubits, “Review of Recent Pilot, Demonstration, Research, and Evaluation Initiatives to Assist in the Implementation of Programs under the Workforce Investment Act,” Chapter 5 of the *Strategic Plan for Pilots, Demonstrations, Research, and Evaluations, 2002-2007*. Baltimore, MD: Johns Hopkins University, October 2002.

- Public information and marketing to make the public aware of the Center and its resources, including general tours and presentations for community groups;
- Available space for employers to recruit and interview prospective employees;
- Sponsoring workshops and other sessions of interest to the general public; and
- Productive employer involvement in policy decisions (setting skills standards for occupations, input into training curricula, co-sponsoring training, financial contributions, commitments to hire those who complete training programs).

In addition to worker-directed strategies, a number of states and localities are implementing various market-based strategies to improve the performance of workforce development programs. Increasingly, Congress includes performance management provisions in legislation, in keeping with the Government Performance and Review Act. Under WIA, for example, the workforce development system is to emphasize the following:

- Performance standards
- Performance based contracting
- Continuing performance improvement (e.g., through negotiated performance management)
- Competitive selection of service delivery operators
- Customer Vouchers
- Consumer information (about vendors, programs, occupations, and labor market)

Some state and local agencies have developed reporting data systems to simultaneously allow participants to be tracked as they receive services, local offices to report their activities and services, and program operators' performance to be monitored. In New York City, for example, along with a contracting system that competitively selects vendors to deliver WIA and welfare-funded employment services, a sophisticated data reporting and tracking system is used to oversee vendors' activity each month, relate that to their negotiated goals, and engage vendor representatives in monthly management meetings to discuss their performance and, if necessary, ways to improve performance.²⁸

²⁸ Demetra Smith Nightingale, Nancy Pindus, Fredrica D. Kramer, John Trutko, Kelly S. Mikelson, and Michael Egner, "Work and Welfare In New York City During The Giuliani Administration: Status and Future Directions," Washington, DC, The Urban Institute, May 2002.

Systems and Resources for Assessing Occupation-Specific Skills. Since at least 1980, there has been considerable discussion about the growing mismatch between skills that businesses want and the skills that job workers have. At the national level, the Secretary's Commission on Achieving Necessary Skills (SCANS) was an overarching initiative to identify the basic skills as well as specific skills associated with particular occupations or industries. In partnership between the government and industry groups, a series of SCANS skills were developed to help specify the skills needed, and many of them articulated in conjunction with certification boards.

One result of the renewed interest in skills has been the development of models or strategies to assess worker skills and link individuals to occupations and industries also categorized by skills in demand. Assessment packages and skills modules, two of which are described here, are now commonly available in One-Stop Career Centers.

WorkKeys is an occupation-based employment system developed by the educational testing institution ACT. *WorkKeys* consists of (1) occupational profiles of the basic skills required of an average worker in hundreds of specific occupations and (2) an assessment package that tests individuals according to the eight basic *WorkKey* job skills:

- Reading for information
- Applied mathematics
- Locating graphical information
- Applied technology
- Writing
- Listening
- Observation
- Teamwork

The WorkKeys database allows training programs to access job profile information on over one thousand occupations to better guide job seekers in their occupational planning. The system is increasingly being used in many One-Stop Career Centers.²⁹

The Career Transcript System (CTS) is an occupational skills assessment, tracking, and certification system developed by Arnold Packer at Johns Hopkins University to better match worker training to specific skills identified by businesses and supervisors, ranging from reading and math to interpersonal skills and teamwork. With a series of over a dozen assessment modules, trainers can create an individual training curriculum tied to the key skills defined by the employer. Separate modules can be used to provide training to supervisors. All individualized training and the results of the training can be entered into a CTS profile, and individuals can receive a personalized record of the training in which they participated, certification received, and skills attained. The individual profile can then be used to help create resumes, and guide the individual in terms of career paths and mobility.

Summary

The brief literature review presented in this chapter highlights some of the more promising programmatic and workforce development strategies that are being used in various states and localities. Perhaps the most important lessons are (1) high-quality workforce development benefits from collaborations between public agencies or institutions and businesses; (2) ideally, skills development training should be linked closely to businesses and targeted on occupations for which the supply of qualified workers is inadequate; (3) public policies and programs should incorporate ongoing long-term support services for low-skilled disadvantaged workers if they are expected to move out of poverty; (4) there is some amount of untapped human capital, particular among mature and older workers and investing in their employment needs could benefit the public as well as the individuals; and (5) states and localities have the flexibility to create a high-performance workforce development system built around the One-Stop Career Center system and the efficient use of computer technology.

²⁹ See ACT's WorkKeys web site. <http://workkeystraining.com>.

III. Trends in Virginia's Population

In this section, we begin by describing the current and changing demographic characteristics of Virginia's population and labor market. Next, we examine changes in workforce demand over the next five years, especially in terms of occupations that are expected to grow and decline and the skills that will be demanded in the future. We also discuss whether worker skills will need to be improved to meet employer demands over the next five years.

We carry out our analyses for Virginia as a whole and for 8 MSA and 4 non-MSA areas. Each county and city in the Commonwealth is in one (and only one) of these 12 areas. The eight MSA areas are Charlottesville, Danville, Lynchburg, Johnson City-Kingsport-Bristol (Virginia portion), Norfolk-Virginia Beach-Newport News (Virginia portion), Richmond-Petersburg, Roanoke, and Washington, DC (Virginia portion), and the four non-MSA areas are the Northeast region, Northwest region, Southside region, and Southwest region.^{30,31}

Our demographic trend analysis provides information about the degree to which Virginia's population is changing with respect to age, educational attainment, race/ethnicity, and gender. These demographic data are from the Virginia Employment Commission and the 1990 and 2000 Decennial Census. We describe the current population and examine how characteristics have changed over the 1990s. We also discuss potential demographic and labor force trends over the next five years. This information provides context for better understanding Virginia's statewide labor market and the local labor markets within Virginia.

Size and Age of Virginia's Population

Virginia's population has been increasing over the last decade and is expected to increase over the next five years, although at a somewhat lower rate. Between 1990 and 2000, Virginia's population increased by roughly 14 percent from 6.2 million to 7.1 million (see Exhibit 1).³²

³⁰ As mentioned above, information about the counties and cities included in each MSA and non-MSA area is presented in Appendix A.

³¹ For simplicity, the Johnson City-Kingsport-Bristol MSA is referred to as Johnson City, the Norfolk-Virginia Beach-Newport News MSA is referred to as Norfolk, and the Richmond-Petersburg MSA is referred to as Richmond.

³² Population data for Virginia and each county and city in the state were obtained from the Virginia Employment Commission (VEC, July 2003). The VEC provides population numbers for 1990 and 2000, along with population projections for the year 2010.

Each of the 8 MSA and 4 non-MSA areas, also experienced population increases during the 1990s, with the Washington, DC (Virginia portion) and Charlottesville MSAs experiencing the largest population increases (of 25 and 22 percent, respectively) and the Danville and Roanoke MSAs the smallest population increases (of one and two percent, respectively). Over the five-year period from 2003 to 2008, Virginia's population is expected to increase by 5.6 percent (see Exhibits 1 and 2).^{33,34} Like the earlier period, Washington, DC and Charlottesville are expected to have the largest increases in population over the 2003-2008 period, followed by Richmond. One area, Danville, is expected to see its population decline slightly (by 0.7 percent) over the next five years.

The aging of the post-World War II baby-boom generation has the potential to affect Virginia's labor market, as Americans age 55 and older have traditionally participated in the labor force at lower rates than prime age persons (ages 25-54). Statewide in 2000, 81 percent of persons ages 25 to 54 participated in the labor force, while only 60 percent of persons ages 55 to 64 and 30 percent of persons 65 and older did so. Exhibit 3 shows how the age of Virginia's population is shifting to include a larger share of persons age 45 and over. Over the next five years (from 2003 to 2008), the share of the population age 45 and older will increase (particularly true of the population 55 and older), while the share of the population ages 25 to 44 will decline. The share of Virginia's population ages 25 to 44 is projected to fall from 30.3 percent in 2003 to 28.2 in 2008 (or by 2.1 percentage points), while the share of the population age 45 and older is projected to increase over these five years from 36.1 percent to 38.9 percent (or by 2.8 percentage points). Exhibit 3 also shows the share of the population ages 16 to 24 is relatively steady, and that the share of the population under age 15 is declining slightly.

Across the 8 MSA and 4 non-MSA areas a general pattern emerges—the share of the population between ages 25 and 44 is declining, while the share of the population ages 45 and older is increasing. These trends can be seen in Exhibit 4, which shows how the share of the population in each age group is projected to change over the next five years. So, for example, this exhibit tells us that the share of Danville's population ages 45 and older is projected to

³³ Population estimates for the years 2003 and 2008 were calculated by assuming that the population will increase by the same number of persons in each year from 2000 through 2010. This assumption is consistent with assumptions made by the Virginia Employment Commission for population projections presented in *Table 16.3 Population Projections for Virginia's Counties and Cities: 2000-2010*.

³⁴ When comparing the population increase from 2003 to 2008 with the population increase from 1990 to 2000, keep in mind that the 2003-2008 increase is over a five-year period while the 1990-2000 increase is over a ten-year period.

increase by 3.9 percentage points (column 4 of Exhibit 4), the largest increase among any of the 12 areas, from 44.3 percent in 2003 to 48.1 percent in 2008 (see column 4 of Exhibit F-1). There is one outlier among the 12 areas, Charlottesville, which shows a slight trend in the opposite direction—the share of the population between ages 25 and 44 is rising slightly and the share ages 45 and older is declining slightly. This opposite trend may be due to the uniqueness of Charlottesville, with the presence of the University of Virginia. Although the statewide data show a slight increase in the share of the population ages 16 to 24, five of the 8 MSA and four non-MSA areas show a decline in this age group between 2003 and 2008. Overall, trends toward an older population are expected to continue across Virginia beyond 2008. This trend towards an older population will likely lead to a lower labor force participation rate and lower employment rate in Virginia, since older persons are less likely than younger persons to participate in the labor force.³⁵

Educational Attainment of Virginia's Population

Virginia's population became more educated during the 1990s, with the percent of persons with a college degree increasing and the percent of persons without a high school degree decreasing. Exhibit 5 shows that between 1990 and 2000 the percentage of Virginians (25 years and older) with less than a high school education declined substantially from 24.8 percent to 18.5 percent, a decline of 6.3 percentage points (or 25 percent).³⁶ The percent of the population with a high school diploma also declined over the 1990s, but by a much smaller amount—from 26.6 percent to 26.0 percent. Additionally, the percent of the population with education beyond a high school degree—some college/associate's degree, bachelor's degree, and graduate or professional degree—increased between 1990 and 2000, where these percentages stood at 26.0 percent, 17.9 percent, and 11.6 percent, respectively, in 2000.

Exhibit 6 shows that the educational attainment of the population (25 years and older) differs substantially across the 8 MSA and 4 non-MSA areas. The Washington, DC area has the highest share of persons with a bachelor's degree or more (46.6 percent) and the lowest share of persons with no high school degree (11.3 percent). The percentage of persons over age 25 in Virginia with an associate's degree was 5.6 percent and ranged from a low of 4.0 percent in the

³⁵ While the labor force participation rate of older workers has increased in recent years, the labor force participation rate of older workers remains significant below the labor force participation rate of younger workers.

³⁶ Unless otherwise noted, these educational attainment data were obtained from the U.S. Census Bureau (<http://factfinder.census.gov/servlet/BasicFactsServlet>).

Northeast region to a high of 7.1 percent in Roanoke. Other areas with relatively high shares of persons with a bachelor's degree or more and relatively low shares of persons without a high school degree are Charlottesville, Norfolk, and Richmond. Six areas stand out as having relatively low levels of education—less than 20 percent has a bachelor's degree and more than 60 percent has a high school degree or less. Furthermore, in these six areas—Danville, Johnson City, Northeast region, Northwest region, Southside region, and Southwest region—more than 25 percent of their population does not have a high school degree.

Looking at changes over time within the 8 MSA and 4 non-MSA areas shows that all areas experienced some increase in educational attainment during the 1990s. Between 1990 and 2000, the state made large strides in reducing the share of the population (25 years and older) with no high school diploma (see Exhibit 7). In 1990, five areas had roughly 40 percent of their population with no high school degree (Danville, Johnson City, Northeast region, Southside region, and Southwest region), and this percentage fell substantially in each of these areas during the 1990s (by roughly 10 percentage points). In the Southside region, for example, 44.8 percent of persons had no high school degree in 1990, and this fell to 35.2 percent in 2000. The share of the population with a high school degree or less also fell in all areas between 1990 and 2000 (see Exhibit 8).³⁷

This educational shift has implications for Virginia's labor force, as more educated persons have higher labor force participation rates. National statistics for July 2003 show that the labor force participation rate of persons with less than high school diploma was 44 percent, while the labor force participation rate of persons with a college degree or more was significantly higher at 78 percent.³⁸ These data suggest that as the educational attainment of Virginia's population increases, so too will Virginia's labor force. In terms of changes in the educational attainment of Virginia's population over the next five years, educational attainment is likely to increase, although the extent to which the trends in the 1990s continue is not clear. Some increases in educational attainment will likely take place since older workers exiting the labor force generally have lower levels of educational attainment than younger workers who are entering the labor force.

³⁷ For more detailed information on educational attainment see Appendix Exhibit F-2.

³⁸ The labor force participation rates for persons with a high school degree only and persons with some college/associates degree were 63 percent and 73 percent, respectively. These national-level labor force participation rates by educational attainment are for persons ages 25 and older and were obtained from the U.S. Bureau of Labor Statistics (<ftp://ftp.bls.gov/pub/suppl/empsit.cpseea17.txt>).

Race and Ethnicity of Virginia's Population

The distribution of persons by race and ethnicity also changed over the 1990s, and now includes fewer persons who are non-Hispanic white, and more persons who are Hispanic.³⁹ It is somewhat difficult to identify racial changes between 1990 and 2000 because race is defined differently in the 1990 and 2000 Censuses. The 2000 Census allowed individuals to report being multi-racial, something that was not allowed in the 1990 Census. Exhibit 9 shows that 1.6 percent of Virginians reported being multi-racial in 2000. While the comparisons are not exact between 1990 and 2000, the data do confirm that the percent of the population that is white, non-Hispanic decreased over the ten-year period (from 76.0 to 70.2 percent), while the percent of the population that is Hispanic increased (from 2.8 percent to 4.1 percent, or by 46 percent).

As with age and educational attainment, there is substantial variation in the racial and ethnic composition of the population across the 8 MSA and 4 non-MSA areas. Exhibit 10 shows the percentage of the population in 2000 that is minority (i.e., not white, non-Hispanic). This ranges from a low of 3.6 percent in Johnson City to a high of 43.5 percent in the Southside region.⁴⁰

Any changes in the racial and ethnic composition of the state and local areas has some potential to affect the labor force, as labor force participation rates differ by race and ethnicity, although the differences are not large. Nationwide in July 2003, Hispanics had the highest labor force participation rate (70 percent), followed by whites and Asians (67 percent) and then by African-Americans (65 percent).⁴¹ This suggests that areas experiencing increases in the Hispanic population (e.g., in Washington, DC the Hispanic population increased from 6 percent in 1990 to 10 percent in 2000), for example, may see slightly higher labor force participation rates in the coming years.

Gender of Virginia's Population

Virginia's population has remained roughly 49 percent male and 51 percent female over the 1990 to 2000 period, with very few differences across the 8 MSA and 4 non-MSA areas. The interest in gender stems from the fact that labor force participation rates are substantially higher

³⁹ Unless otherwise noted, these race and ethnicity data were obtained from the 1990 and 2000 Decennial Census, U.S. Census Bureau (<http://factfinder.census.gov/servlet/BasicFactsServlet>).

⁴⁰ For more detailed information on race and ethnicity by area see Appendix Exhibit F-3.

⁴¹ These national data were obtained from the U.S. Bureau of Labor Statistics.

for males than females. Nationwide in July 2003 the labor force participation rate of males was 73.4 percent, while it was only 59.6 percent for women.⁴² While female labor force participation rates are substantially lower than male rates, female labor force participation rates have increased significantly over the last few decades—male rates have not. However, over the last five years, the labor force participation rates of women have remained relatively steady, with, for example, the labor force participation rate of white women standing at roughly 60 percent over the 1998 to 2002 period.⁴³ This leveling off of labor force participation rates of women and the relatively fixed percent of the population that is female/male, suggests that gender will likely not play a role in changing Virginia's labor force over the next five years.

This section provided background information on Virginia's population and examines demographic characteristics including age, educational attainment, race/ethnicity, and gender. This information, in conjunction with information on the extent to which different populations participate in the labor force, provides a context for better understanding Virginia's statewide labor market and the local labor markets within Virginia. We now turn to our more detailed analysis of expected changes in Virginia's labor force over the next five years.

⁴² These national data were obtained from the U.S. Bureau of Labor Statistics and can be found at <http://www.bls.gov/news.release/empst.t01.htm>.

⁴³ These national data were obtained from the U.S. Bureau of Labor Statistics.

IV. Trends in Demand for Workers in Virginia

This section provides information about Virginia's labor market, focusing on expected labor market changes over the next five years. We begin by presenting a brief overview of Virginia's labor markets in terms of labor force participation rates, employment rates, and unemployment rates. Second, we examine the extent to which the demand for workers by employers and the supply of workers (i.e., persons who want a job) is expected to match up in the coming years. Third, we turn our attention to specific occupations and identify occupations that are projected to have the largest increase in the demand for workers over the next five years and occupations that are projected to decline. Finally, we discuss the skills required by workers to carry out the jobs available over the next five years and the extent to which additional formal education or on-the-job training is likely to be necessary for Virginia to meet employers' demands five years down the road. As with earlier analyses, we examine Virginia as a whole as well as the 8 MSA and 4 non-MSA areas, and discuss the differences and similarities across the areas.

Characteristics of Virginia's Labor Market

To provide context for our analysis of Virginia's labor markets into the future, we briefly discuss the current status of Virginia's labor markets (in 2002) along with information on how labor markets have changed over the last five years (from 1998 to 2002). We examine three measures of labor market activity—the labor force participation rate, employment rate, and unemployment rate.⁴⁴ These labor market data were obtained from the U.S. Bureau of Labor Statistics.⁴⁵

Statewide in 2002, there were 3.74 million Virginians in the labor force and 3.58 million Virginians employed, leading to a labor force participation rate of 73.3 percent and an employment rate of 70.4 percent (Exhibit 11).⁴⁶ Across the 8 MSA and 4 non-MSA areas, the

⁴⁴ These rates are defined as follows: (1) the *labor force participation rate* is the percent of the population 16 years and older that is in the labor force (i.e., employed or actively searching for employment) divided by the population 16 years and older; (2) the *employment rate* is the percent of the population 16 years and older that is employed divided by the population 16 years and older; and (3) the *unemployment rate* is the percent of the population 16 years and older that is unemployed (i.e., not employed and actively searching for a job) divided by the labor force.

⁴⁵ These data were obtained from <http://data.bls.gov/labjava/outside.jsp?survey=la>.

⁴⁶ The labor force participation rate of 73.3 percent is calculated by dividing the population 16 years and older that is in the labor force (3.74 million) by the population 16 years and older (5.09 million). The

labor force participation rates are quite varied and range from a low of 61.1 percent in the Southwest region to a high of 78.5 percent in the Washington, DC MSA (Virginia portion). The employment rates similarly vary across areas. Our analysis shows that these labor force participation and employment rates are related to the age of the population. In particular, areas with lower labor force participation and employment rates have a higher fraction of their population that is age 55 and over. In local areas that may have difficulty meeting employers' demands for workers, these maturing persons may be an important untapped resource.

Appendix Exhibit F-4 shows the labor force participation rate and employment rates for the five-year period from 1998 to 2002 for each of the 8 MSA and 4 non-MSA areas. The top two panels of this table show that labor force participation rates generally increased over the 1998-2002 period, while the employment rates generally increased between 1998 and 2000 but decreased between 2000 and 2002.

We now turn to our third measure of labor market activity—the unemployment rate. Statewide in 2002, 152,159 people were unemployed, which resulted in an unemployment rate of 4.1 percent (Exhibit 12). The variation in the unemployment rate across areas is quite substantial. In 2002, the unemployment rate varied from a low of 2.6 percent in Charlottesville to a high of 8.5 percent in Danville. These unemployment rates suggest a tight labor market in Charlottesville and a weak labor market in Danville. Other areas with relatively low unemployment rates (below four percent) in 2002 were Roanoke, Washington, DC, and the Northwest region, while other areas with relatively high unemployment rates (5.5 percent or higher) were Johnson City, Lynchburg, and the Southside region. This variation across the state has been quite steady over the last five years (1998-2002). Consistent with the 2002 unemployment rates, the five-year average (1998-2002) unemployment rates show a similar ordering with Charlottesville still having the lowest unemployment rate and Danville the highest (see Appendix Exhibit F-4).

While the unemployment rates vary substantially across areas, all areas in Virginia are facing tighter labor markets in the 2002 as compared to 2000. By and large, unemployment rates fell between 1998 and 2000, and then rose between 2000 and 2002 (Appendix Exhibit F-4). Between 2000 and 2002, Virginia's unemployment rate increased by 85 percent (from 2.2

employment rate of 70.4 percent is calculated by dividing the population 16 years and older that is employed (3.58 million) by the population 16 years and older (5.09 million).

percent to 4.1 percent), and ten of the 8 MSA and 4 non-MSA areas saw their unemployment rates increase by more than 50 percent.

These labor market data confirm that the Commonwealth's local labor markets are quite diverse, with some areas of the state having strong labor markets and others facing weak labor markets. One similarity is that recent trends show that all of Virginia's labor markets have weakened since the boom of the late 1990s, with employment rates falling and unemployment rates rising since 2000. We turn now to analyses examining Virginia's labor market over the next five years.

The Match between Labor Demand and Labor Supply

An important element of this analysis is understanding the extent to which the demand for workers by employers and the supply of workers (i.e., persons who have or want a job) match up. If the supply of workers is significantly greater than the demand for workers by employers, for example, then unemployment will be high. Conversely, if the supply of workers is less than the demand for workers, then employers will have difficulty filling vacancies—a situation many employers across the country experienced during the economic boom of the late 1990s. In this section, we discuss results of our analysis that estimate the extent to which the supply of workers and the demand for workers match up five years from now, in the year 2008, for Virginia as a whole and for each of the 8 MSA and 4 non-MSA areas.⁴⁷

For Virginia as a whole, we find that the projected supply of and demand for workers are quite similar in 2003 and 2008. There is, not surprisingly, a substantial degree of variation across the 12 areas. This variation across areas is consistent with the fact that some of Virginia's local labor markets currently have low unemployment rates (near three percent) while others have relatively high unemployment rates (near eight percent). Four areas have been identified as having potentially weak labor markets (i.e., not enough jobs for workers) in the year 2008. These areas—Danville, Northeast region, Southside region, and Southwest region—currently have relatively high unemployment rates. The three areas in the state that are projected to have

⁴⁷ Our estimates of employment demand in 2008 are taken from the *Industry and Occupational Employment Projections: 1998-2008*, which is published by the Virginia Employment Commission. These employment projections publications are available for the state as a whole and each of the 8 MSA and 4 non-MSA areas (available at http://www.vec.state.va.us/index_labor.cfm?loc=lbrmkt&info=projpubl). Estimates of the supply of labor in 2008 are calculated by multiplying the expected population in 2008 by the expected labor force participation rate in 2008, where the 2008 labor force participation rate is calculated as the average of the labor force participation rate in years 2000 through 2002.

relatively strong labor markets in the year 2008 currently have relatively low unemployment rates—Charlottesville, Richmond, and Roanoke.

While our estimates of labor supply and labor demand in 2008 are based on numerous assumptions, this analysis provides some important insight into Virginia's labor market in the next five years. First, there is a substantial degree of variation across the 8 MSA and 4 non-MSA areas in the state, where three of the four non-MSA regions are projected to have relatively weak labor markets in the year 2008. Second, areas of the state that currently have relatively strong labor markets are projected to keep that status over the next five years, just as areas that currently have relatively weak labor markets are projected to remain weak.

Occupational Changes Over the Next Five Years

Occupations with Jobs Available

Occupations that are expected to have the largest number of jobs available over the next five years are varied and range from those that require only short-term on-the-job training to those that require a college degree. A (net) job opening in an occupation is generated if one of two things happen: (1) a new job is created (i.e., job growth) or (2) an individual who holds a job exits the labor force for reasons such as retirement or death (i.e. job replacement).⁴⁸ Job replacements are often an important component of job openings (i.e., jobs available). The number of school teachers may be unchanged over a five-year period, for example, but if many school teachers are retiring, then there would be many job openings for school teachers.

Exhibit 13 shows the 25 occupational categories that are projected to have the largest number of jobs available (i.e., job openings) over the next five years in Virginia. These 25 occupations account for roughly 40 percent of all job openings over the next five years. Cashiers and retail salespersons—two low-skilled occupations—are expected to have the highest number of jobs available. Foodservice and truck drivers, for example, are other occupations in the top 25 list that require short-term training, while teachers and computer technology jobs are top 25 occupations that require a college degree. Among these 25 occupational categories, 15 require

⁴⁸ In other words a job opening results “when new positions are created by industrial growth (expansion) or when existing positions are vacated because of the death, retirement, or separation from the labor force of incumbent employees (replacement). ... vacancies created by promotion or transfer are not considered job openings since overall there is no aggregate change in job availability.” (Virginia Employment Commission, Economic Information Services Division. “Industry and Occupational Employment Projections: 1998-2008.” Richmond, VA. http://www.vec.state.va.us/index_labor.cfm?loc=lbrmkt&info=projpubl (Accessed July 2003, p. vi).

only short-term on-the-job training (as identified by the U.S. Bureau of Labor Statistics), and these 15 occupations account for nearly 65 percent of the jobs in these 25 occupations. Of the remaining 10 occupations in the top 25, two require moderate on-the-job training, two require an associate's degree, and six require a college degree.

Across the 8 MSA and 4 non-MSA areas in Virginia, there are some interesting similarities and differences in the group of occupations with the projected highest number of jobs available (Appendix Exhibit F-5 show the top 25 occupations for each area). First, the majority of occupations on the top 25 list require only short-term on-the-job training in almost all areas, and range from 12 of the 25 occupations in the Washington, DC MSA to 17 out of the 25 occupations in the Northeast and Southside regions. Cashiers and salespersons appear in the top three in all 12 areas, and in fact, are in the top two in every area except in the Washington, DC MSA. Other low-skilled occupations that appear in every area are food preparation workers, waiters and waitresses, and janitor and cleaner. On the more skilled side of the occupational distribution, general managers and top executives are in the top 10 occupations in each area. Health care careers also appear in the top 25 occupations in all areas.

Information technology is one employment sector that differs across the state. Information technology will be an important source of job openings in 5 of the 8 MSA and 4 non-MSA areas over the next five years (Charlottesville, Norfolk, Richmond, Roanoke, and Washington, DC). While information technology occupations claim four spots on Virginia's list of top 25 expanding occupations, information technology occupations are not among the top 25 growth occupations in seven areas (Johnson City, Danville, Lynchburg, Norfolk, Northeast region, Northwest region Southside region, and Southwest region). Conversely, there are occupations that did not make Virginia's top 50 lists, but are expected to be important sources of jobs in some areas of the state—this includes agriculture and textile jobs. Agricultural jobs make the top 25 list in half of the areas (Johnson City, Danville, Northeast region, Northwest region, Southside region, and Southwest region) and textile jobs make the top 25 list in four areas (Johnson City, Danville, Southside region, and Southwest region). While these two occupational categories are an important source of employment in some areas, these job openings are coming from job replacements (e.g., replacing retired workers) not job growth (i.e., the creation of new jobs). In fact, the total numbers of jobs in these agricultural and textile occupations are declining (see next section on “Occupations in Decline”), so all of the job openings are coming from job replacements. In other words, the number of workers in these occupations who are exiting the labor force (thereby making jobs available for other persons) is greater than the decline in the total number of jobs.

Occupations in Decline

Our examination of declining occupations focuses on those occupational categories that are expected to have the largest decrease in the total number of jobs (i.e., positions) over the next five years.⁴⁹ Exhibit 14 shows the 25 occupations in Virginia that are projected to have the largest decline in the number of jobs (i.e., negative job growth) over the next five years. Like our analysis of job openings, we find that occupations that are expected to contract over the next five years are varied, although the skill levels are in a more narrow range—from those requiring only short-term on-the-job training to those requiring postsecondary vocational training. We find that the majority (13) of occupations on the top 25 list require moderate on-the-job training, nine require short-term on-the-job training, one requires long-term on-the-job training, one requires work experience in a related occupation, and finally, one requires a postsecondary vocational award.⁵⁰ Of these 25 declining occupations, almost all (96 percent) of the employment decline is occurring in occupations that require little skill—short-term or moderate on-the-job training.

In the state as a whole, declining occupations that make the top 25 list include agriculture, textiles, mining, and railroad transportation (see Exhibit 14). Agriculture and textile occupations make the top 25 list in all 8 MSA and 4 non-MSA areas, and, not surprisingly, mining makes the top 25 list only in the Southwest region (see Appendix Exhibits F-6). Every mining occupation in the Southwest region is projected to decline over the next five years, and on average, they are projected to decline by a substantial one-third. We now turn to examine skills likely to be in demand over the next five years.

Skills in Demand and the Need for Skill Improvement

In this section we look more broadly at the skills likely to be in demand statewide and in each of Virginia's 8 MSA and 4 non-MSA areas over the next five years. To do this, we use data from the U.S. Bureau of Labor Statistics that classifies occupations into one of eleven categories based on the occupation's education and training requirements, where these categories range from short-term on-the-job training to doctors and professional degrees. Using this skill

⁴⁹ Recall that our analysis of occupations that are expected to have the largest number of jobs available over the next five years looked at the job openings that occurred if one of two things happen: (1) an additional job is created (i.e., job growth) or (2) an individual who holds a job exits the labor force for reasons such as retirement or death (i.e., job replacement). In our analysis of declining occupations, we focus on those occupations where jobs are destroyed—negative job growth.

⁵⁰ These skill categories are defined in detail below.

information, in conjunction with the educational attainment of Virginia's labor force, we provide information on the extent to which additional formal education or on-the-job training is likely needed for Virginia to meet employer demands five years down the road.

Before turning to our findings, we present the eleven BLS defined education and training categories.

- **Short-term on-the-job training:** 0-1 month of on-the-job instruction
Occupational examples: cashier, waiter, janitor, food preparation worker, taxi driver
- **Moderate on-the-job training:** 1-12 months of on-the-job training
Occupational examples: bookkeeper, painter, coach, roofer
- **Long-term on-the-job training:** more than 12 months of on-the-job training
Occupational examples: farmer, carpenter, chef, plumber
- **Work experience in a related occupation:** experience in a job that allows one to be in a supervisory position
Occupational examples: sales worker supervisors, blue-collar supervisors
- **Postsecondary vocational training:** completion of a program that usually results in a license or proficiency examination
Occupational examples: secretary, beautician, welder, data processor
- **Associate's degree:** at least two years of full-time study
Occupational examples: nurse, electronics technician, paralegal
- **Bachelor's degree:** at least four years of full-time study
Occupational examples: social worker, insurance salesperson, accountant, engineer
- **Work experience plus a bachelor's degree or higher:** experience in a related non-managerial position plus four years of full-time study
Occupational examples: manager, government executive
- **Master's degree:** one to two years of full-time study beyond bachelor's degree
Occupational examples: teacher, librarian, social scientist
- **Doctoral degree:** three or more years of full-time study beyond bachelor's degree
Occupational examples: college faculty, scientist
- **First professional degree:** six years of full-time study
Occupational examples: lawyer, clergy, physician

Based on information provided by the BLS, each of Virginia's 800-plus occupations is identified as requiring one of these eleven levels of skill.⁵¹

Skills in Demand

Exhibit 15 presents, for Virginia as a whole, projected total employment in 2008 and projected job openings in 2008 by skill categories. This table shows that the majority of jobs do not have formal educational requirements. For example, almost two-thirds of employment and job openings in 2008 are expected to require on-the-job training or work experience in a related occupation (see columns 2 and 4 of Exhibit 15). Further, the majority of employment within this skill category requires only short-term on-the-job training (or roughly 40 percent of total employment). One-quarter (26 percent) of job openings over the next five years require a bachelor's degree or higher, and the remaining 10 percent require postsecondary vocational training or an associate's degree. This distribution of employment by skill level is not unlike the distribution for the nation as a whole, which shows that roughly 70 percent of employment requires only on-the-job training or work experience, 10 percent requires postsecondary training or an associate's degree, and finally, the remaining 20 percent requires a bachelor's degree or higher.⁵²

The skill requirements differ somewhat across the MSA and non-MSA areas in Virginia, with the outliers being Washington, DC and Charlottesville on one end and Johnson City and Danville on the other end (see Exhibit 16 and Appendix Exhibit F-7). In terms of job openings over the next five years, Washington, DC has, by far, the largest percentage of jobs that are expected to require a bachelor's degree or higher—33 percent. This is followed by Charlottesville, where 25 percent of jobs are expected to require a bachelor's degree. Not surprisingly, both of these MSA have a relatively low percentage of job openings that are expected require only on-the-job training or work experience—56 percent and 62 percent, respectively. Conversely, Johnson City and Danville have a relatively low percentage of job openings that are expected to require a bachelor's degree—15 percent and 16 percent, respectively—and a high percentage of job openings that are expected to require on-the-job training or work experience—78 percent and 76 percent, respectively.

⁵¹ In cases where the BLS data did not provide an education or skill level for an occupation, we used the skill level of similar occupations as a proxy.

⁵² Demetra Smith Nightingale and Edgar Lee, "Low-Wage and Low-Skill Occupations: Identifying the Best Option for Welfare Recipients," Discussion paper, The Urban Institute, Washington, DC, 1999.

The Need for Skill Improvement

To provide information on whether there are obvious areas where skills should be improved to meet employer demands over the next five years, we examine projected future skill needs in conjunction with the educational attainment of Virginia's labor force. We do this for the state as a whole, as well as for the 8 MSA and 4 non-MSA areas. The goal of this analysis is to provide information on the extent to which additional postsecondary education or on-the-job training can help Virginia meet employers' demands.

The majority of jobs in Virginia (64.4 percent) (and in the nation as a whole) are identified as requiring on-the-job training or work experience—they are not identified as requiring postsecondary education (i.e., postsecondary vocational training, associate's degree or higher). Even so, increasing the number of Virginians with more than high school degree (i.e., some postsecondary education) will likely lead to a more productive and effective workforce. Similarly, the significant reduction in the fraction of Virginia's population with no high school degree will certainly lead to a more productive workforce.

This analysis provides three important program implications: (1) work experience is very important; (2) workplace-based training and learning, including on-the-job training, is also important; and (3) postsecondary education and training should be specifically targeted to jobs that are in demand,⁵³ such as licensed practical and vocational nurses and automotive mechanics.

An important caveat is that this analysis is done at a very broad level—examining MSA and non-MSA areas—and the picture may look different for specific employers in specific areas. One way get at this level of detail, is to survey employers about their specific needs (current and expected future) and survey workers in the same areas about their specific work experience and educational attainment.

Summary

This section examined several aspects of Virginia's population and labor markets, with a particular focus on workforce demand in the coming five years. Our analysis confirms that the 8 MSA and 4 non-MSA areas in Virginia are quite diverse, with some areas facing brighter

⁵³ This type of analysis was recently done for the state of Virginia. See Mangum Economic Consulting, LLC. "Regional Assessment of Workforce-Driven Demand for Instructional Programs." Study Commissioned by the Career Training and Education Committee of the Virginia Workforce Council, Virginia, 2003.

economic scenarios than others. In general, local areas that currently have relatively strong labor markets are projected to keep that status over the next five years, while areas with relatively weak labor markets are projected to remain weak. Four areas were identified as having potentially weak labor markets (i.e., not enough jobs for workers) through the year 2008—Danville, Northeast region, Southside region, and Southwest region—and three areas were identified as having relatively strong labor markets through the year 2008—Charlottesville, Richmond, and Roanoke.

In terms of the demand for workers' skills, our analysis shows that the majority of job openings over the next five years do not have postsecondary educational requirements. This is true for Virginia as a whole and for each of the 8 MSA and 4 non-MSA areas. Statewide, we find that almost two-thirds of job openings over the next five years are expected to require on-the-job training or work experience, and that one-quarter of job openings are expected to require a bachelor's degree or higher. Using this skill information in conjunction with educational characteristics of Virginia's labor force, we find that large gains in postsecondary education by Virginia's workforce is not a key element in meeting employers' demands in the future. Rather, we conclude that work experience and workplace-based training and learning, including on-the-job training, are important. Further, we suggest that postsecondary education and training should be specifically targeted to jobs that are in demand, especially nurses, teachers, and computer/information technology professionals.

V. Employment-Related Characteristics and Preferences of Virginia's Workers

In this section, we describe the results from the telephone survey of Virginians. The survey data are a rich source of information for describing the characteristics of the current workforce in Virginia. The data gathered as part of the survey includes information about many work-related issues not available in other data sources and complements the analyses in Sections III and IV. The 12-minute survey was conducted with 1,004 non-institutionalized adults age 18-65 residing in Virginia. After weighting the data by region, race/ethnicity, age, and gender, the total number of weighted cases is 4,597,000, the approximate population of Virginia between the ages of 18 and 65. In general, the survey data provide descriptive statistics at one point in time, August 2003, when the survey was administered. However, on some issues (e.g., skill upgrading, retirement), the survey asked Virginians to estimate their plans for the next five years.

The survey results are reported for Virginia as a whole, by age group, and by region when the sample sizes are sufficient to support such an analysis.⁵⁴ The seven regions of Virginia used for the survey data analyses are: Northern Virginia, Central Virginia, Bay Area, Tidewater Area, Southside, Shenandoah Valley, and Southwest Virginia (Information about the counties and cities included in each of the seven regions is presented in Appendix B.).

The demographic characteristics—age, race and ethnicity, and educational attainment—gathered as part of the survey are representative of Virginia as a whole and are similar to the U.S. Census data described in Exhibits 3 through 10 in section III. We begin this section by describing annual income of Virginians in 2003. We then describe various employment characteristics of workers in Virginia. Among other work-related issues, we discuss current occupation, number of jobs held, job sharing, current skills and future desired training, where workers might go for future training, and who pays for this training. In this section, we also present information received from the survey about employer-provided benefits, workplace environment, quality of life issues, retirement plans, and a few characteristics of non-workers, such as Unemployment Insurance benefits received and plans for future work.

⁵⁴ The sample size of 1,004 yields small numbers of respondents in some regions. This limits the extent to which the data can be analyzed by region. In Exhibits 17-39 where regional data is divided into categories, the number of categories is limited to ensure that there is at least an average of 20 people in each category. For example, since there are only 62 people in the sample from the Shenandoah Valley, the data for this region is never broken into more than 3 categories (e.g., age groups 18-35, 35-49, and 50-65).

Characteristics of Virginia's Workers

As Exhibit 17 shows, annual household income varies from one region of Virginia to the next. Thirty-seven percent of respondents statewide report household incomes above \$75,000 per year. A similar percentage (39 percent) report household income of between \$30,000 and \$75,000 per year, and nearly one-quarter report annual income below \$30,000 per year statewide.⁵⁵ Over one-third of respondents in Southside and Southwest Virginia report incomes of less than \$30,000 per year. On the other end of the spectrum, nearly 60 percent of the Northern Virginia respondents report household incomes in excess of \$75,000 per year.

A primary purpose of the survey was to gather information about Virginians' current jobs including what training was required and the occupation and sector of their current job. Persons were also asked about jobs held within the past five years. Detailed information was also obtained about current skills, whether future training is desired, where individuals would go for future training, and who would most often pay for this training. In cases where respondents said they did not want or need future training, they were asked why they did not want future training. The information obtained through the survey identifies strengths of Virginia's workforce, where there are gaps in skills and training, and where Virginia's workers plan to seek training to fill those gaps.

Employment Status: Two-thirds of Virginians (67 percent) aged 18 to 65 are employed full-time—defined as 30 hours or more per week—at their main job, as shown in Exhibit 18. A small percentage of Virginians—6 percent—report being employed part-time—defined as fewer than 30 hours per week—at their main job, and statewide about 4 percent were unemployed (i.e., not employed and currently looking for work) at the time of the survey. Nearly one-quarter (22 percent) of Virginians were out of the labor force at the time of the survey—this includes those that are homemakers (7 percent), retired (6 percent), students (5 percent), disabled/unable to work (3 percent), and those not employed and not looking for work (2 percent). Employment status varies by age as shown in Exhibit 19. Those individuals in the youngest age range—18 to 24—and the oldest age range—50 to 65—were more than twice as likely to be out of the labor

⁵⁵ Since the survey data on household income were collected in ranges, we cannot determine per capita annual income. Therefore, it would be erroneous to characterize households with incomes below \$30,000 per year as low-income and households with incomes in excess of \$75,000 as high-income households because their household size is not known. This is particularly true given the differences in cost-of-living between various parts of the state of Virginia.

force as those ages 25 to 49. This is likely due to the greater percentage of students in the 18 to 24 year olds and the greater number of retirees in the 50 to 65 year age range.

Training: In order to determine what types of experience and training are required by their current job, workers in Virginia employed at the time of the survey were asked about whether on-the-job training, vocational training after high school, or prior experience as a supervisor in a related occupation were required for their current job. Prior experience as a supervisor in a related occupation was cited by one-third of Virginians and slightly fewer—27 percent—said vocational training after high school was required for their current job as shown in Exhibit 20. On-the-Job Training (OJT) was most often cited as required with nearly two-thirds of Virginians responding that it was required for their current job. Southside Virginia was the only region to substantially deviate from the statewide pattern of experience and training with only 13 percent citing prior experience as a supervisor in a related occupation and 41 percent citing vocational training after high school. Of those Virginians who said OJT was required, 38 said less than one month of training was required, 36 percent said one to 12 months was required, and 25 percent said more than 12 months of OJT was required as shown in Exhibit 21.

Conversations with workforce development and business representatives in Abingdon, Virginia confirm that OJT—both initially and continuing—is essential to preparing workers for their jobs regardless of their education background. When asked whether it was cost-effective to provide OJT to employees when there was a possibility a worker might then leave the company, one business representative said that it was necessary to provide OJT to workers or they would be unable to adequately perform on the job. The prevalence of OJT in Virginia coupled with the research literature confirming that OJT directly linked to the workplace and specific occupations is particularly effective in preparing workers,⁵⁶ leads to the conclusion that OJT is an important part of both privately-funded business strategy and public workforce development policy.

Occupation and Employment Sector: A detailed breakdown of Virginia’s workers by occupation is shown in Exhibit 22 (Exhibit F-8 provides numeric detail). About one-fifth of Virginians employed at the time of the survey are professional workers (e.g., lawyer, doctor, scientist, teacher, engineer, nurse, accountant, investment banker, stock brokerage, marketing,

⁵⁶ Nudelman, Jodi. “The Impact of Job Training Partnership Act Program for Adult Welfare Recipients,” Chapter 4 in *Improving the Odds: Increasing the Effectiveness of Publicly-Funded Training*, edited by Burt S. Barnow and Christopher King, Washington, DC: The Urban Institute Press, 2000.

musician). Almost 12 percent of employed Virginians describe themselves as a skilled tradesperson (e.g., printer, baker, tailor, electrician, machinist, linesman, railroad engineer, plumber, or does mechanical work such as garage mechanic, carpenter) and as a manager, executive, or official (e.g., in a business, government agency, or other organization). Given the small sample sizes of employed Virginians surveyed for some of the regions, it is not feasible to examine the occupational distribution by region.

The majority (60 percent) of Virginia's workers are employed at a private company, one-quarter (25 percent) are employed for the federal, state, or local government, and 16 percent are employed by a non-profit entity or are self-employed as shown in Exhibit 23. The distribution of workers age 50 to 65 by sector is somewhat different than for younger workers, with fewer than half of workers age 50 to 65 (47 percent) working for private companies and 30 percent working for the government. If the number of federal, state, and local government jobs in Virginia is growing or remains unchanged in the coming years, retirees leaving government jobs may result in demand for more government workers in the coming years. This may present an opportunity for younger workers seeking stable employment in jobs that tend to have adequate pay and benefits as well as advancement opportunities. If government employment continues to decline (as has occurred with federal jobs), then there may not be an increase in demand for government workers.

Job Mobility and Alternative Employment Opportunities: The survey data yield important information about job mobility in the past five years and reasons for leaving the last job held for Virginians employed at the time of the survey. In general, younger workers are much more likely to have held multiple jobs within the past five years than older workers as Exhibit 24 shows. Nearly one-quarter (23 percent) of workers in Virginia age 18-34 have held four or more jobs in the past five years compared to only 6 percent and 4 percent of workers age 35-49 and 50-65, respectively. Likewise, only 28 percent of workers age 18-34 had only one job in the past five years compared to 55 percent and 68 percent of workers age 35-49 and 50-65, respectively. Exhibit 25 shows that while the job mobility is similar for most regions of Virginia, both Shenandoah Valley and Southwest Virginia show lower mobility with 63 percent of workers having only one job in the past five years compared to 48 percent for Virginia as a whole.

Job mobility is not inherently good or bad, however, variations by age or region may present some challenges for employers or incumbent workers. Challenges for employers include maintaining a trained workforce which is difficult when workers change jobs frequently—this was cited as a concern by some employers who attended the forum in Abingdon, Virginia. Likewise, incumbent workers who have held one job for a number of years may find themselves vulnerable if they are laid off and if they have been trained for one specific occupation or industry and are

unable to find another similar job—this was also cited as a concern of workforce development representatives in Richmond and Abingdon, Virginia.

As Exhibit 26 shows, there are many reasons—both positive and negative—why Virginians who have had more than one job in the past five years left their last job. Most commonly workers said they left their last job for reasons indicating the decision was a choice such as “because they *found* a new job” (30 percent) or “to leave the workforce for some other reason” (30 percent) or “so they could continue their education” (9 percent). Other reasons for leaving a job include, “because they wanted to *look* for a new job” (15 percent), “because they were laid off or let go for some other reason” (13 percent), or “because of health reasons” (3 percent).

In order to determine whether there is interest among Virginians for alternative employment opportunities, respondents who were working at the time of the survey were asked whether they would be interested in a job sharing arrangement. For the purposes of the survey, job sharing is defined as “when some employees share the same job and work part-time and receive some or all of the benefits that would be available if they worked full-time.” Forty-two percent of Virginia workers said they would be very or somewhat interested in a job sharing arrangement, as Exhibit 27 shows. Interest in job sharing varied somewhat by region with Central and Bay Area Virginia workers somewhat less interested in a job sharing arrangement.

Worker Skills: In an effort to estimate the current skills and likelihood of seeking training in the future, Virginia’s workers were asked which of seven skills they use as a primary part of their current jobs and how likely they are to seek additional training for those seven skills within the next five years. Gathering self-reported information can lead to overestimates for positive characteristics such as current skill levels, however, comparing across different skill areas and between current and desired future skills may yield important information in assessing Virginia’s workforce. Respondents were asked about only the following seven skills:

- Problem solving skills;
- Working as a team member;
- Basic math skills;
- Writing skills;
- Customer service skills;
- Computer skills; and

- Supervisory skills.

Some of these skills are considered “soft skills” such as working as a team member and problem solving. Additional soft skills cited as important by participants in all three forums (in Abingdon, Richmond, and Washington, DC) but lacking among workers included timeliness and attendance.

As Exhibit 28 shows, about 90 percent of currently employed workers in Virginia cited problem solving skills and working as a team member as skills that are a primary part of their current job (Exhibits F-9 and F-10 provide numeric details). Writing and basic math skills were also reported to be required skills for a majority (80 percent) of workers in Virginia, and approximately 70 percent of workers said they use customer service skills and computer skills as a primary part of their current job. Finally, and not surprisingly, only half of Virginia’s workers said they use supervisory skills as a primary part of their current job.

In general, well over two-thirds of workers in Virginia indicate that they are very or somewhat likely to seek additional training within the next five years. Upgrading computer skills was the most frequently cited type of training they might seek, with over 70 percent of workers reporting they would be very or somewhat likely to seek to upgrade their computer skills within the next five years (Exhibit 28).⁵⁷ Next, about 60 percent of workers said they would be very or somewhat likely to seek additional training to improve problem-solving skills and skills that will help them work with a team. A lower percentage (48 percent) of workers reported they would be very or somewhat likely to seek additional training for writing, and 37 percent reported they would seek additional training to improve their basic math skills.

There are a number of options for Virginians who would like to upgrade their skills including programs that are largely publicly funded such as training available through local career centers. Another option, which is partially subsidized with public funds, is classes provided by local community colleges. Additional options that are less likely to be paid for publicly include four-year colleges, private training institutions, and adult continuing education. However, workplace-based training or OJT is certainly the most convenient source of training, especially for workers trying to juggle other obligations such as family and school. Consistent with this, OJT was most frequently cited by workers who said they are very or somewhat likely to seek additional training—cited by 77 to 88 percent of workers depending on age, as shown in

⁵⁷ Exhibits F-11 and F-12 provide further detail.

Exhibit 29. The local workforce center was the least frequently cited location for additional training for all age groups—about 25 to 29 percent. Four-year college was more often cited by young workers age 18-34 (53 percent) compared to 32 and 28 percent for 35 to 49 and 50 to 65 year olds, respectively. Workers age 18 to 34 were also somewhat more likely to obtain additional training at a community college or a private training institution, though workers 50 to 65 were also slightly more likely to get training at a community college than workers age 35 to 49. Workers age 50 to 65 were somewhat more likely to get training through adult continuing education, and workers age 35 to 49 were, in turn, somewhat more likely than 18 to 34 year olds to rely on adult continuing education.

In addition to where Virginians are likely to go for future training, the survey gathered information about who would pay for additional training to obtain skills needed and relevant for their current job. Exhibit 30 examines the question of who would pay by full- and part-time employment status since many employers provide training subsidies as a benefit. We also examine this by age, as this information can assist Virginia policymakers target public resources for incumbent worker training where they are most needed. Over half of full-time workers in Virginia (53 percent) said their employer would pay all the costs of additional training, and an additional one-quarter said the employer and employee would share the costs. On the other hand, about half (47 percent) of part-time workers said the employee would pay for the entire cost of additional training. More than half of workers age 35 to 65 said their employer would pay the entire cost of additional training while 43 percent of workers age 18 to 34 said this was so, also shown in Exhibit 30. The lower rate of employer-provided training to young workers may be due to more part-time work by younger workers.

Workers who said they were not very likely or very unlikely to increase their skills in any one of the seven skill areas listed above within the next five years, were then asked why they would not seek additional training. The purpose of the follow-up question was to determine whether cost was a barrier to seeking additional training, and, as Exhibit 31 shows, cost was rarely cited as a reason. Overwhelmingly, workers said the reason they are not likely to seek additional training was because they “don’t need additional training.” The only exceptions to this were supervisory skills where workers said they would not seek additional training “for some other reason” and computer skills where workers said they would not seek additional training because “they don’t use the skill.”

The survey data allow a detailed examination of the characteristics of Virginia’s workers, including their job mobility, current skills, future desired training, where they would go for training, who would pay for training, and if they are not likely to seek training, why not. By

examining these various characteristics for different age groups or regions, we can begin to see patterns that can inform state and local workforce development strategies. And, when funds are limited, targeting strategies to particular groups or areas can yield positive results. We turn next to employer-provided benefits, the importance of workplace environment, and various quality of life issues.

Employer-Provided Benefits, Workplace Environment, and Quality of Life

Employer-Provided Benefits: The survey provides important information about employer-provided benefits (regardless of whether the employee personally receives the benefit) and the importance of workplace environment that can be used to assess which benefits workers may be lacking and which workplace issues are of greatest importance to workers in Virginia of different ages. The survey also asked about various issues that may affect quality of life for both working and non-working Virginians. The purpose of examining quality of life issues is to determine what positive things attract Virginians to the state and, therefore, which issues are likely to matter most in attracting additional employers and workers to the Commonwealth.

Nearly 90 percent of full-time workers in Virginia said health insurance and vacation/annual leave is provided by their employer, as shown in Exhibit 32. Eighty percent said employers provide retirement benefits, sick leave, and life insurance to full-time employees. Nearly three-quarters of workers report that employers provide short- or long-term disability, and 62 percent report that employers provide some subsidized continuing education to full-time workers in Virginia.

Workplace Environment and Quality of Life: Workers were asked to rate the importance of six different characteristics of their workplace environment, including:

- Relationships with co-workers;
- Relationship with your supervisor;
- Flexibility of hours;
- Having a short commute;
- Having a workplace that is racially, religiously, or ethnically diverse; and
- Having the option to telecommute or work from home.

Individuals' relationships with their co-workers and supervisors are the workplace characteristics that are most important to Virginians. Almost 80 percent of workers reported that

these relationships are a very important part of the workplace environment. The importance of these relationships held across age groups, as shown in Exhibit 33. Flexible hours and short commute times were also identified as important characteristics, with 59 percent and 49 percent of workers responding that they are a very important part of the workplace environment, respectively. While flexibility of hours and short commute times are important for large fraction of Virginians, a substantially lower fraction (27 percent) of Virginians reported that the option to telecommute and work from home is a very important part of the workplace environment. Looking across age groups, the importance of flexible work hours are similar, although having a short commute is more important for persons ages 35 to 65 than persons ages 18 to 34. Having the option to telecommute is reported to be the least important for persons ages 18 to 24 and most important for persons 35 to 49.

All survey respondents, regardless of employment status, were asked to rate the importance of six issues that may affect quality of life, including:

- Having time to spend with friends and family;
- Living in an area with a low crime rate; and
- Having access to quality schools;
- Having access to affordable housing;
- Living in an area with little traffic congestion.; and
- Living close to a metropolitan area.

Having time to spend with family and friends and living in a low crime area are the two quality of life issues reported to be of most important to Virginians. Almost 90 percent of individuals reported that these quality of life measures are very important to them. While the importance of time to spend with friends and family is similar across age groups, living in a low crime area is less important to 18 to 24 year-olds (74 percent) as compared with persons ages 25 to 65 (87 percent to 92 percent). Access to quality schools and access to affordable housing was reported to be very important to roughly 75 percent of Virginians, followed by living in an area with little traffic (51 percent) and by living close to a metropolitan area (22 percent). Living in an area with little traffic is one quality of life issue that differs substantially for older and younger Virginians. Thirty-six percent of persons ages 18 to 24 reported that living in an area with little traffic was very important, while 64 percent of persons 50 to 65 did so. Another difference across age groups is that, not surprisingly, access to quality schools is less important to persons ages 50 to 65 than younger persons.

Retirement Plans of Virginia's Workers

Given the potential impact of the aging of the baby-boom on Virginia's labor market in the coming years, it is important to determine when Virginians plan to retire. Many factors influence when an individual decides to retire, including eligibility for Social Security benefits and employer-provided retirement plans. As more Virginians reach retirement age in the coming years, workforce development policies may be designed to keep some retirement-age workers on the job. One such policy is phased retirement, which is defined (for the purposes of this study) as "when your employer allows you to cut back on your working hours gradually over several years before retiring totally." In this section, we discuss Virginians' planned age of retirement, the likelihood of seeking paid work following retirement, and the likelihood of taking phased retirement if offered by the employer.

The survey asked respondents to estimate their planned age of retirement. Although, this information is likely to be more accurate for workers nearing retirement age, this question was asked of all full- and part-time workers, students, and individuals who are not employed but looking for work. This question was not asked of individuals who said they are already retired, homemakers, individuals disabled or unable to work, and other individuals who are not employed and not looking for work. Nearly one-third of respondents (32 percent) said that they are planning to retire before age 60, as shown in Exhibit 35. Twenty-two percent of those surveyed said they plan to retire between the ages of 60 and 64, and one-third (34 percent) between the ages of 65 and 69, and 12 percent plan to retire after age 69.

Although these estimates for Virginia may represent a respondent's best guess, data indicate that labor force participation rates are increasing for both men and women age 55 and older. Recent analyses of Current Population Survey data by Patrick Purcell (2003) of the Congressional Research Service indicates that 26.6 percent men age 65 to 69 were employed in 1995, and in 2003 32.1 percent of men age 65 to 69 were employed.⁵⁸ Similarly, the employment of women age 65 to 69 increased from 17.5 percent to 22.5 percent between 1995 and 2003.⁵⁹

⁵⁸ Patrick J. Purcell. "Older Workers: Employment and Retirement Trends." Congressional Research Service, Report for Congress. Washington, DC: Congressional Research Service, The Library of Congress, October 2003.

⁵⁹ Patrick J. Purcell. "Older Workers: Employment and Retirement Trends." Congressional Research Service, Report for Congress. Washington, DC: Congressional Research Service, The Library of Congress, October 2003.

The majority (69 percent) of Virginians who plan to retire within the next ten years (and who are also currently employed Virginians, students, or those who are not employed but looking for work) say they are very or somewhat likely to seek paid work at some point after they retire, as shown in Exhibit 36. Of these respondents, the overwhelming majority (86 percent) said they are likely to seek part-time work. These findings indicate that, although the aging of baby-boomers will likely affect the labor force participation rates in Virginia, the reduction in labor force participation may be somewhat mitigated if many baby-boomers seek paid employment following retirement.

Phased retirement is one of several options employers may offer workers in an attempt to induce them to remain on the job instead of retiring. Other options that may also be considered include job sharing, reduced work schedules, and rehiring retired workers who are interested in working part-time.⁶⁰ As shown in Exhibit 37, 38 percent of respondents who are within 15 years of retiring said they would be very likely to take phased retirement⁶¹ if it was offered by their employer. Another 35 percent said they would be somewhat likely. Together this represents nearly three-quarters of non-retirees who are nearing retirement who would be interested in taking phased retirement.

Characteristics of Virginia's Non-Workers

The survey gathered some additional information on non-workers in Virginia. Specifically, 16.4 percent of non-workers were not employed but were looking for work (i.e., unemployed), as shown in Exhibit 38. The remaining 84.6 percent includes homemakers, retirees, students, those disabled or unable to work, and those not employed and not looking for work, also shown in Exhibit 38. Of those individuals who are unemployed and looking for work, 84 percent of them are currently receiving Unemployment Insurance benefits as of August 2003 (see Exhibit 38).

⁶⁰ Patrick J. Purcell. "Older Workers: Employment and Retirement Trends." Congressional Research Service, Report for Congress. Washington, DC: Congressional Research Service, The Library of Congress, October 2003.

⁶¹ The likelihood of taking phased retirement if offered by their employer was asked of currently employed Virginians, students, or those who are not employed but looking for work and those who said they plan to retire within the next 15 years.

Nearly 60 percent of all non-workers⁶² in Virginia said they were very or somewhat likely to look for work in the next five years, shown in Exhibit 39. Of those who said they were very or somewhat likely to look for work in the next five years, 60 percent said they would prefer full-time work and 40 percent said they would prefer part-time work. This segment of Virginia's population may represent an untapped resource of potential workers.

⁶² In this case, “non-workers” includes homemakers, students, disabled or unable to work, those not employed but looking, and those not employed but not looking. Retirees are excluded.

VI. Strategic Policy Recommendations for Improving the Skills and Training of Incumbent Workers in Virginia

In this section, we summarize the overall implications of this study and present strategic recommendations that Virginia officials might consider. Our policy recommendations draw on the information gathered from all components of the study (1) analysis of existing data on demographic and workforce trends in Virginia, (2) results of the telephone survey data measuring worker characteristics, current skills, and desired future training, (3) the three forums with local and national representatives of the workforce development system and the business community in Richmond and Abingdon, Virginia and in Washington, DC, and (4) a review of the relevant literature to identify best practices. The recommendations represent a range of public and private strategies for training and retraining incumbent workers and are designed to assist Virginia in raising the skills and productivity of its workforce. Some of the strategies recommended here may already be in the planning stages or underway in Virginia since Governor Warner and the Virginia Workforce Council are actively engaged in assessing and reforming the Commonwealth's current workforce development system.

We have identified six interrelated recommendations for the Virginia Workforce Council to consider. There are two common underlying features of the recommendations. First, the success of reform strategies depends on state-level leadership along with strategies tailored to the special and diverse demographic, economic, and community characteristics of sub-state regional and local areas. Second, each of the recommendations assumes regular utilization of data and information related to programs, characteristics of the workforce, and trends in the labor market.

1. *Create a high-performance career development system built around the Workforce Investment Boards (WIBs);*
2. *Improve the link between training and specific occupations and industries, by better using labor market data on projected business need for labor;*
3. *Consider more industry- and occupation-specific sectoral training strategies to take advantage of economies of scale;*
4. *Encourage more partnerships between Virginia's community colleges, employers, and other training partners to develop regional strategies to elevate the overall education of Virginians;*

5. *Identify untapped human capital, particularly among mature and older workers and invest in their skills development*; and
6. *Incorporate ongoing long-term support services for low-skilled, disadvantaged workers* to increase the overall skills and productivity of Virginia's workers.

Create a high-performance career development system built around the Workforce Investment Boards (WIBs). Currently, in Virginia there are 22 workforce development and training programs, administered by ten state agencies in three secretariats (i.e., Commerce and Trade, Education, and Health and Human Resources).⁶³ The Governor's recent appointment in June 2003 of Dr. Barbara Bolin, Special Advisor to the Governor for Workforce Development, and the recently stated goal of developing a broader plan for workforce services restructuring in Virginia by September 1, 2003⁶⁴ are likely part of a larger plan in Virginia to streamline and redesign the current workforce development system.

As these changes continue to unfold in Virginia, the flexibility afforded by the *Workforce Investment Act of 1998 (WIA)*, in allowing local workforce development boards and One-Stop Centers to determine how best to meet the local employment and training needs of incumbent workers will be an asset. The 17 Workforce Investment Boards (WIBs) located throughout Virginia and the 44 One-Stop Centers provide a localized system of workforce services on which Virginia can build. The intent of the One-Stop system is to provide all workers and all employers (i.e., "universal") access to information, programs, and services, including skills training.

With the local workforce development structure already in place, the Governor, Dr. Bolin, and the Virginia Workforce Council all have important roles to play as state-level coordinators of a revised workforce development system that is designed to eliminate duplication of services, leverage various funding sources, and coordinate the appropriate players (e.g., employers, Community Colleges, public and private programs, WIB representatives, local elected officials, etc.).

While the state-level organization is critical to the success of Virginia's workforce development system, ultimately it is the local- and regional-level structures and the nature of

⁶³ The Joint Legislative Audit and Review Commission. *Review of Workforce Training in Virginia*. Commonwealth of Virginia, January 2003.

⁶⁴ This plan has not been made public and no release date has been issued.

WIA that will ensure that Virginia's workers receive services tailored to their local labor market and the educational and training opportunities available in their community. By expanding accessibility to demographic and labor market data, WIBs and administrators would be better able to develop long-term plans that meet local needs. Region-wide collaboration, and not just local area initiatives, would further enhance the performance of the system, particularly given the overlapping geographic areas served by community colleges.

Improve the link between training and specific occupations and industries for which the projected supply of qualified workers is inadequate. As discussed in section IV above, occupations that are projected to grow vary across the 8 MSA and 4 non-MSA areas in Virginia. High-skilled occupations that are in highest growth occupations in each area include general managers and top executives, and several health care careers. Information technology and computer jobs will also be an important source of future job openings in 5 of the 8 MSA (Charlottesville, Norfolk, Richmond, Roanoke, and Washington, DC) and all 4 non-MSA areas over the next five years. To fill these needs, local areas may need to attract new workers with these skills or begin long-term training strategies aimed at increasing the number of workers qualified for these occupations.

While some of the high-growth jobs require considerable education (e.g., executives, nurses, teachers), the majority of the high-growth occupations require only short-term on-the-job training, and no specific education level. Cashiers and salespersons are the top growth jobs in all 12 local areas. While these entry-level jobs generally have lower than average wages, workforce development programs in regions facing layoffs and plant closings may want to consider these jobs as short-term options for workers who should continue searching for better paying employment opportunities or participate in new training.

In 2003, the General Assembly amended the Virginia Workforce Council statute to require that each local WIB develop an annual "Demand Plan" for its workforce investment area. Each Demand Plan will be "based on a survey of local and regional businesses that reflects the local employers' needs and requirements and the availability of trained workers to meet those needs and requirements."⁶⁵ The purpose of the Demand Plan is to identify the jobs and job skills needed by employers in each area.

⁶⁵ Virginia Employment Commission. "Demand Planning Guidance." Approved by the Virginia Workforce Council on June 5, 2003. Richmond, VA: Virginia Employment Commission, June 5, 2003, p. 2.

The local Demand Plans in conjunction with the regional occupational projections available through the U.S. Bureau of Labor Statistics provide a basis for local- and regional-level strategic planning on the future skill needs of local workers and businesses. These data may be used by local One-Stop Centers or related workforce development, education, training, and economic development programs to better anticipate future occupational and labor market shifts.

Consider more industry- and occupation-specific sectoral training strategies to take advantage of economies of scale. Sectoral training strategies are industry- or occupation-specific training, usually linked to a particular employer or cluster of employers, and often providing services that intervene between workers, job seekers, or trainees on one hand, and employers, firms and industries on the other. Sectoral training may result in major economic efficiencies since incumbent workers are trained for jobs that employers say are in demand, and training programs and firms benefit from economies of scale (since they can sometimes pool training resources).

Sectoral training strategies may be particularly relevant for (1) small training entities in Virginia including public training providers and small businesses, and (2) in less populated regions of Virginia where the numbers of potential or current workers and/or businesses are small. A small or medium-sized business may benefit from collaborations with other businesses in a similar industry or with other businesses interested in training for a similar occupation or skill (e.g., computer applications). For example, a small retail business may be interested in computerized accounting training for five employees. By joining with other small retailers with a similar need for training in computerized accounting, it might be more affordable to hire a trainer or contract for customized training. Likewise, a public training provider, such as a community college, may reduce its training costs by providing incumbent training to a group of small employers rather than to a single employer.

Less-populous regions of Virginia may have special sectoral training opportunities. For example, in Southwest Virginia, managers of human resource divisions from many different employers and industries meet periodically to discuss issues related to incumbent worker training, among other things. They might expand their interaction to include considering the benefits of jointly sponsoring incumbent worker training.

Encourage more partnerships between Virginia's Community Colleges and others to develop regional strategies to elevate the overall education of Virginians. Partners for education may include not just traditional educational institutions, but also local One-Stop Career Centers, employers, community-based organizations (CBOs).

Our analysis clearly documents variations by region in educational attainment. Six local areas stand out as having relatively lower levels of education—more than 25 percent of their population has no high school degree, more than 60 percent has a high school degree or less, and less than 20 percent has a college degree; these areas are Danville MSA, Johnson City MSA, and the 4 non-MSAs—Northeast region, Northwest region, Southside region, and Southwest region. These regions could benefit from local- and regional-level policies aimed at increasing educational attainment. While the U.S. Census data indicate that almost two-thirds of employment and job openings in Virginia in 2008 are expected to require on-the-job training or work experience in a related occupation rather than formalized higher education, increasing the education of Virginia’s workers will increase the productivity and skills of Virginia’s workforce.

Virginia’s community college system is a critical element in increasing the educational attainment of Virginians. The system of community colleges is an affordable, flexible option that can serve adults of various educational backgrounds and skill levels. For many, a return to education means first acquiring basic skills—through Adult Basic Education, English as a Second Language, or General Educational Development programs—necessary to enroll in a credentialing program or college-level courses. For others, who may already be college-ready, the community college system is an affordable option that provides flexible class schedules for incumbent workers with families or other obligations.

Linkages between community colleges and employers, as discussed during the Abingdon forum, may be beneficial for both employers and incumbent workers. One employer in Southwest Virginia described the customized training for employees provided by the local community college as a very important resource that provides on-the-job training to incumbent workers. For CBOs that operate training programs or provide social services, linkages to community colleges can expand the array of training, remedial programs, and supportive services available to their participants.⁶⁶ Partnerships between community colleges and local career centers are also mutually beneficial since workforce centers and WIBs can help leverage resources, such as individual training accounts, to help pay for training at community colleges.

Community colleges, CBOs, employers, One-Stop Centers, and other potential partners would benefit from working together to develop a regional strategy based on their intimate

⁶⁶ Richard Kazis and Marty Liebowitz. “Opening Doors to Earning Credentials—Changing Courses: Instructional Innovations That Help Low-Income Students Succeed in Community College.” New York, NY: MDRC, July 2003.

knowledge of the training and skills likely to be in demand within their region of Virginia as well as their knowledge of the current skills and education of incumbent workers. While these partnerships may already exist to some extent in Virginia, continued and expanded collaborations will further enhance the skills and education of incumbent workers.

Identify untapped human capital, particularly among mature and older workers, and invest in their employment needs. As we described in Section IV, labor force participation rates are quite varied and range from a low of 61.1 percent in the Southwest region non-MSA to a high of 78.5 percent in the Washington, DC MSA (Virginia portion); employment rates similarly vary across area. Our analysis shows that these labor force participation and employment rates are related to the age of the population. In particular, areas with lower labor force participation and employment rates have a higher fraction of their population that is age 55 and over. In local areas that may have difficulty meeting employers' demands for workers, these maturing persons may be an important untapped resource.

Thus, the aging baby-boomers will likely lower the labor force participation rates in all parts of Virginia. This effect could be somewhat mitigated if baby-boomers are encouraged to seek paid employment following retirement, even if it is part-time work. As more Virginians reach retirement age in the coming years, workforce development policies such as phased retirement, job sharing, reduced work schedules, and rehiring retired workers on a part-time basis may be designed to keep some retirement-age workers on the job.⁶⁷ Our analysis suggests that phased retirement, job sharing, and working after retirement, particularly part-time, are all options that are amenable to Virginia's workers (see Section V).

Incorporate ongoing long-term skill development and support services for low-skilled, disadvantaged workers to increase overall skills and productivity of Virginia's workers. In addition to workers who are regularly employed, the labor market includes a large number of workers who are just entering the job market, or who cycle in and out of the job market. Many of these are lower-skilled workers with limited education who are often under-employed or unemployed, new entrants to the job market, or persons transitioning from welfare to work.

To increase the overall skills and productivity of Virginia's workforce, publicly-funded workforce development programs should embrace upgrading the skills of low-income

⁶⁷ Patrick J. Purcell. "Older Workers: Employment and Retirement Trends." Congressional Research Service, Report for Congress. Washington, DC: Congressional Research Service, The Library of Congress, October 2003.

individuals to increase their success in the workforce. Policymakers interested in helping move individuals out of poverty, may want to incorporate job retention and career advancement strategies into job-preparation, job search, and job training programs.⁶⁸

To improve the career advancement opportunities for low-skilled workers, Virginia workforce development centers may want to sponsor or facilitate training and education opportunities that are sufficiently flexible, accessible, and meet the short-term time horizons of lower-paid workers. In addition, tuition reimbursement used for programs to enhanced training may need to be more easily accessible to lower-paid workers. Reducing the amount of out-of-pocket costs on the front-end and allowing workers to attend training during work hours or to make up lost work hours would increase accessibility.⁶⁹

Based on our analyses, these six interrelated strategies could form a framework for improving the overall skills and productivity of Virginia’s incumbent workforce. The success of these strategies depends on local- and regional-level collaborations among workforce development providers, employers, educators, and policymakers. Their success also depends critically on the regular use and maintenance of data and statistics on the unique and changing demographic and workforce trends in each of Virginia’s regions, which could improve long-term policy planning at the state, regional, and local levels.

⁶⁸ Demetra Smith Nightingale, “Work Opportunities for People Leaving Welfare,” Chapter 6 in *Welfare Reform: The Next Act*, edited by Alan Weil and Kenneth Finegold, Washington, DC: Urban Institute Press, 2002.

⁶⁹ Pindus, Nancy, Daryl Dyer, Caroline Ratcliffe, John Trutko, and Kellie Isbell. *Industry and Cross-Industry Worker Mobility: Experiences, Trends, and Opportunities for Low-Wage Workers in Health Care, Hospitality, and Child Care*. Washington, DC: The Urban Institute, December 1997.

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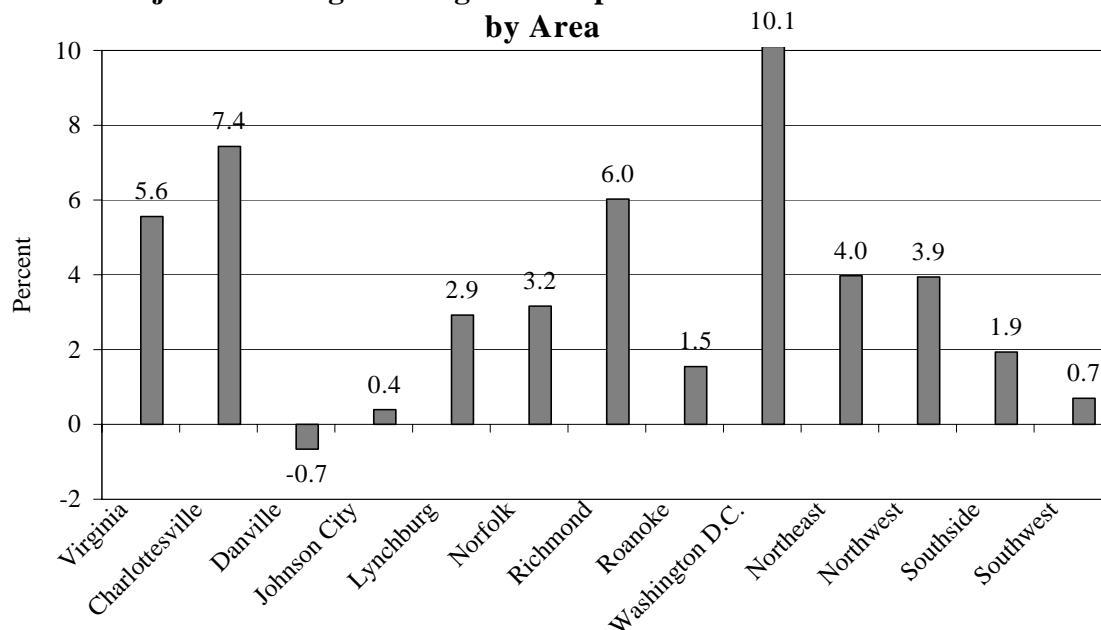
VIII. Exhibits 1 – 39

Exhibit 1
Virginia's Population Over Time by Area

	Actual		Estimated		Projected Change from 2003 to 2008	
	1990	2000	2003	2008	Number	Percent
<i>Virginia</i>	6,187,358	7,078,494	7,322,816	7,730,019	407,203	5.6 %
<i>MSAs</i>						
Charlottesville	131,107	159,576	167,023	179,435	12,412	7.4
Danville	108,711	110,156	109,719	108,991	-728	-0.7
Johnson City	87,517	91,873	92,091	92,455	364	0.4
Lynchburg	193,928	214,911	218,748	225,143	6,395	2.9
Norfolk	1,429,508	1,551,351	1,581,365	1,631,389	50,024	3.2
Richmond	865,640	996,512	1,033,888	1,096,182	62,294	6.0
Roanoke	231,474	235,932	238,142	241,826	3,684	1.5
Washington D.C.	1,732,377	2,167,757	2,307,721	2,540,993	233,273	10.1
<i>Non-MSA Areas</i>						
Northeast	142,698	162,569	166,538	173,154	6,616	4.0
Northwest	443,962	513,083	525,517	546,240	20,723	3.9
Southside	219,566	252,996	255,967	260,919	4,952	1.9
Southwest	600,870	626,067	628,687	633,053	4,366	0.7

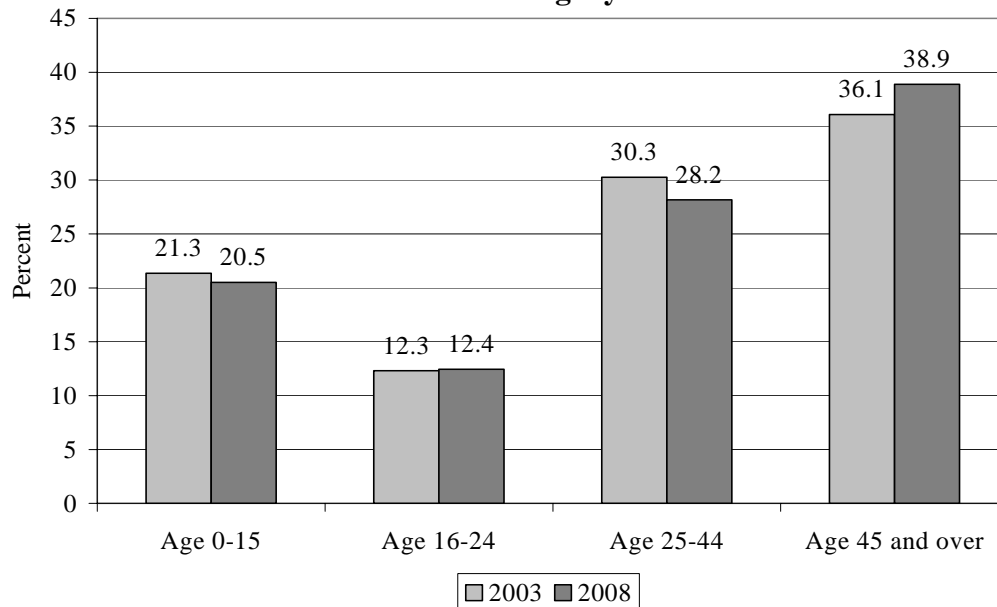
Source: Authors' tabulations from population data provided by the Virginia Employment Commission.

Exhibit 2
**Projected Change in Virginia's Population from 2003 to 2008
by Area**



Source: Authors' tabulations from population data provided by the Virginia Employment Commission.

Exhibit 3
Percent of Virginia's Population in 2003 and 2008 in Each Age Category



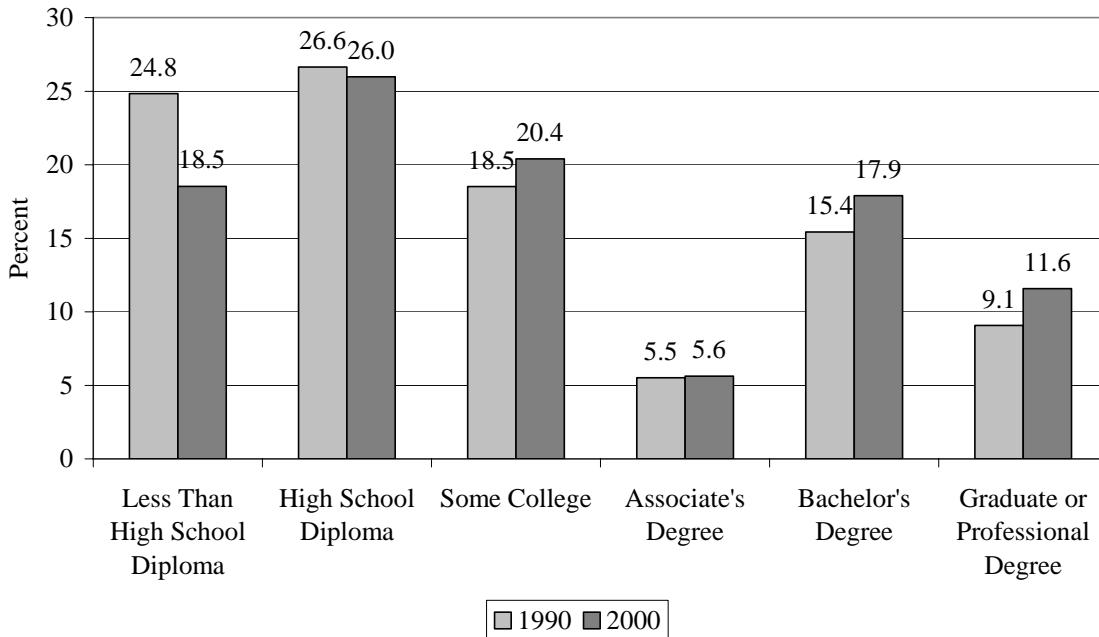
Source: Authors' tabulations from population data provided by the Virginia Employment Commission.

Exhibit 4
Change from 2003 to 2008 in the Percent of Virginia's Population in Each Age Category by Area

Area	Age 0-15	Age 16-24	Age 25-44	Age 45 and over
<i>Virginia</i>	-0.8	0.1	-2.1	2.8
<i>MSAs</i>				
Charlottesville	0.4	-0.8	0.5	-0.1
Danville	-1.4	0.4	-2.8	3.9
Johnson City	-0.5	-0.3	-2.1	2.9
Lynchburg	-1.6	-0.2	-1.3	3.1
Norfolk	-0.8	-0.4	-2.4	3.6
Richmond	-1.0	-0.2	-1.7	3.0
Roanoke	-1.4	0.6	-2.4	3.2
Washington D.C.	-0.7	0.6	-2.7	2.9
<i>Non-MSA Areas</i>				
Northeast	-0.8	0.5	-1.7	2.1
Northwest	-0.8	0.4	-1.7	2.2
Southside	-1.2	0.0	-1.6	2.8
Southwest	-1.1	0.5	-1.8	2.4

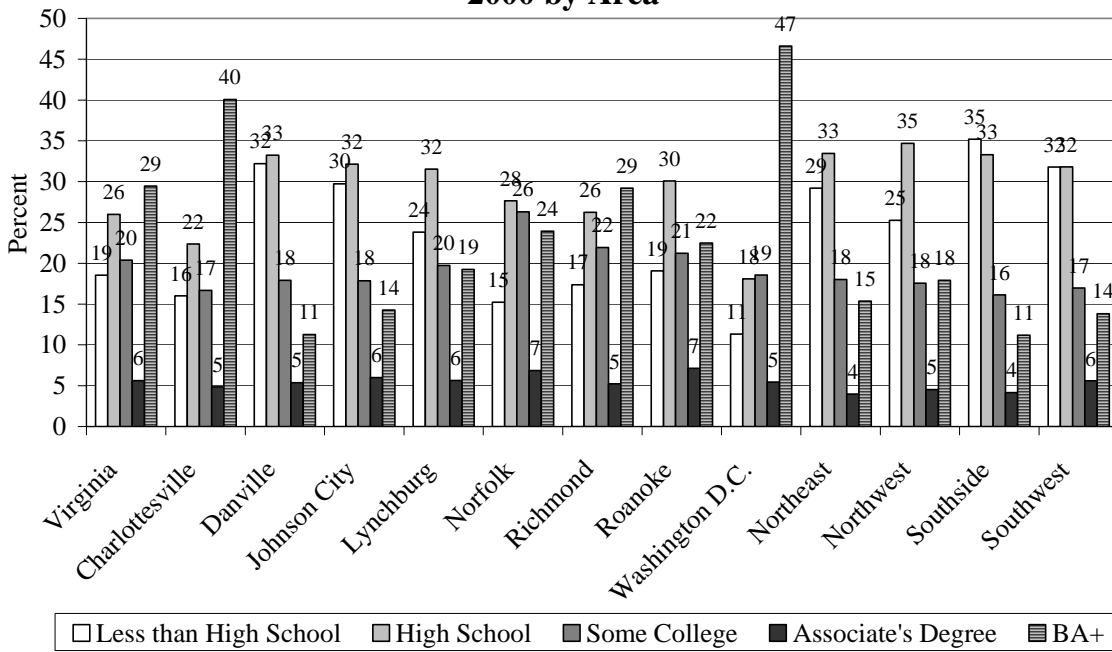
Source: Authors' tabulations from population data provided by the Virginia Employment Commission.

Exhibit 5
Educational Attainment of Virginia's Population 25 Years and Older in 1990 and 2000



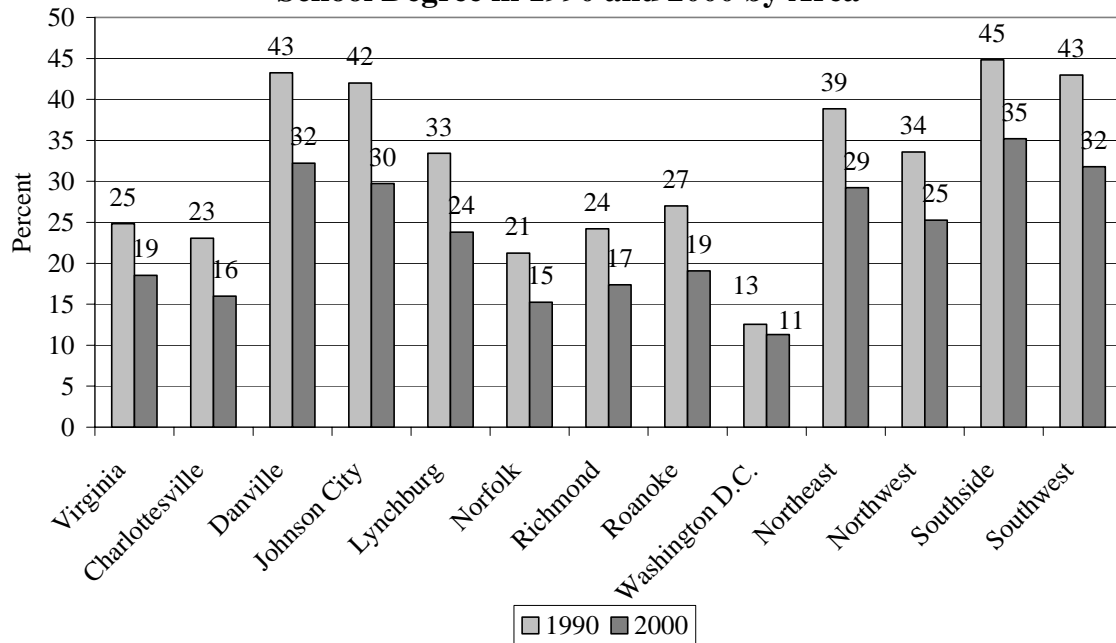
Source: Authors' tabulations from the 1990 and 2000 Census, U.S. Census Bureau.

Exhibit 6
Educational Attainment of Population 25 Years and Older in 2000 by Area



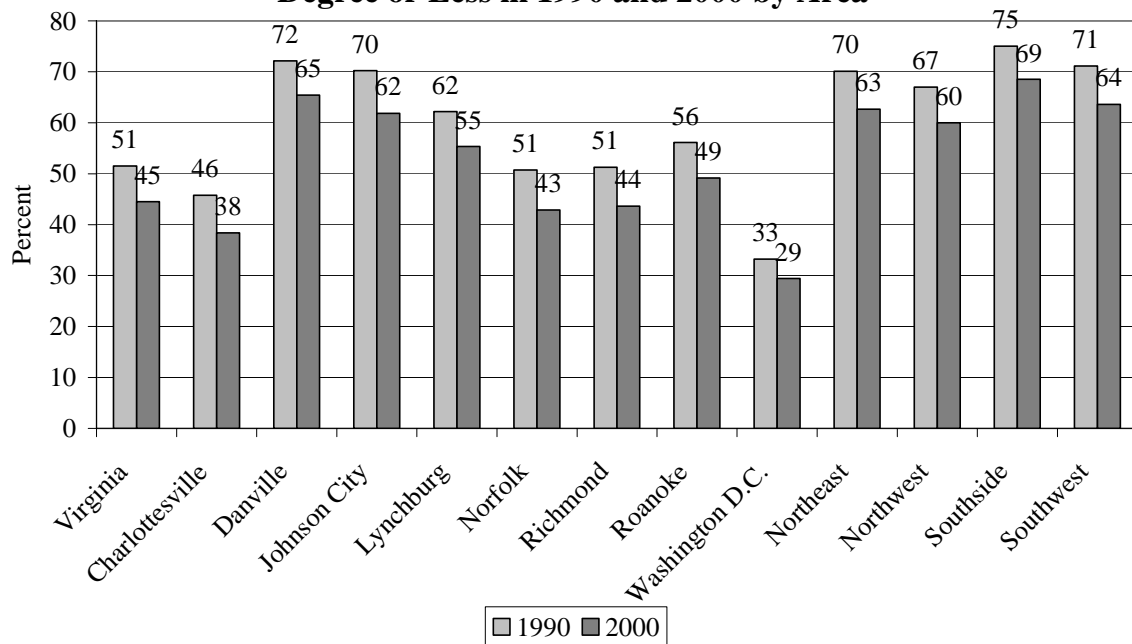
Source: Authors' tabulations from the 2000 Census, U.S. Census Bureau.

Exhibit 7
Percent of Population 25 Years and Older with No High School Degree in 1990 and 2000 by Area



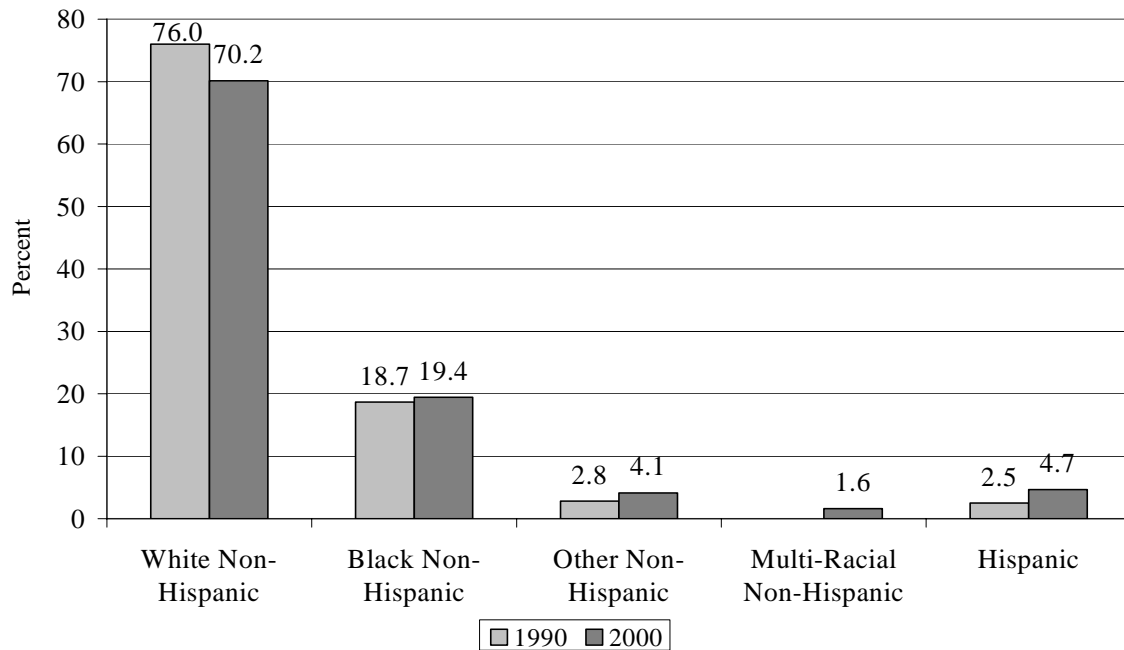
Source: Authors' tabulations from the 1990 and 2000 Census, U.S. Census Bureau.

Exhibit 8
Percent of Population 25 Years and Older with a High School Degree or Less in 1990 and 2000 by Area



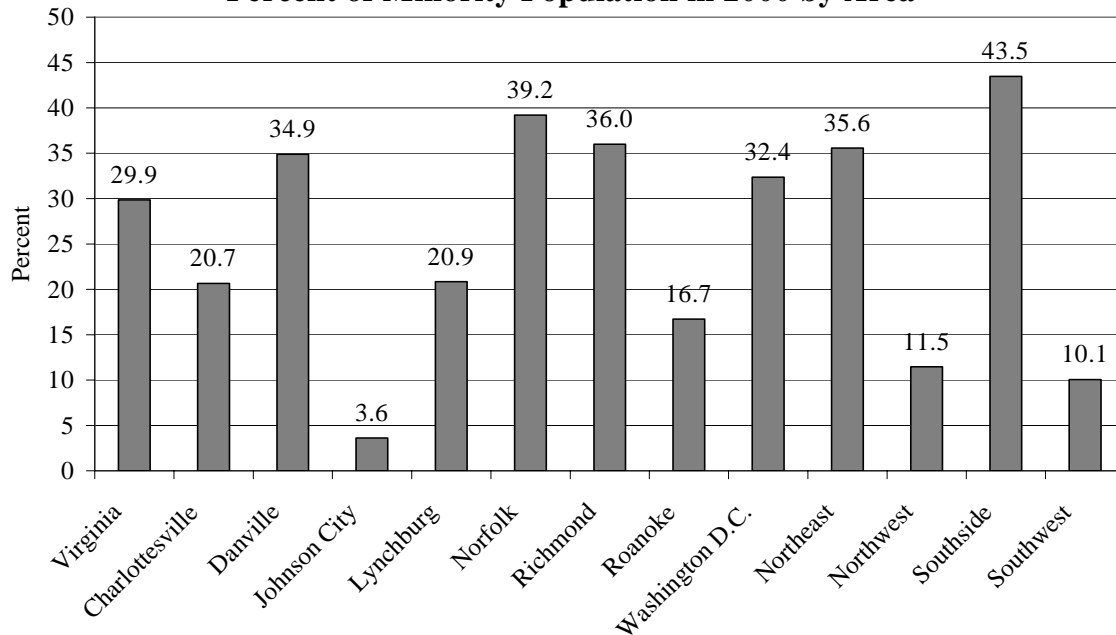
Source: Authors' tabulations from the 1990 and 2000 Census, U.S. Census Bureau.

Exhibit 9
Race and Ethnicity of Virginia's Population in 1990 and 2000



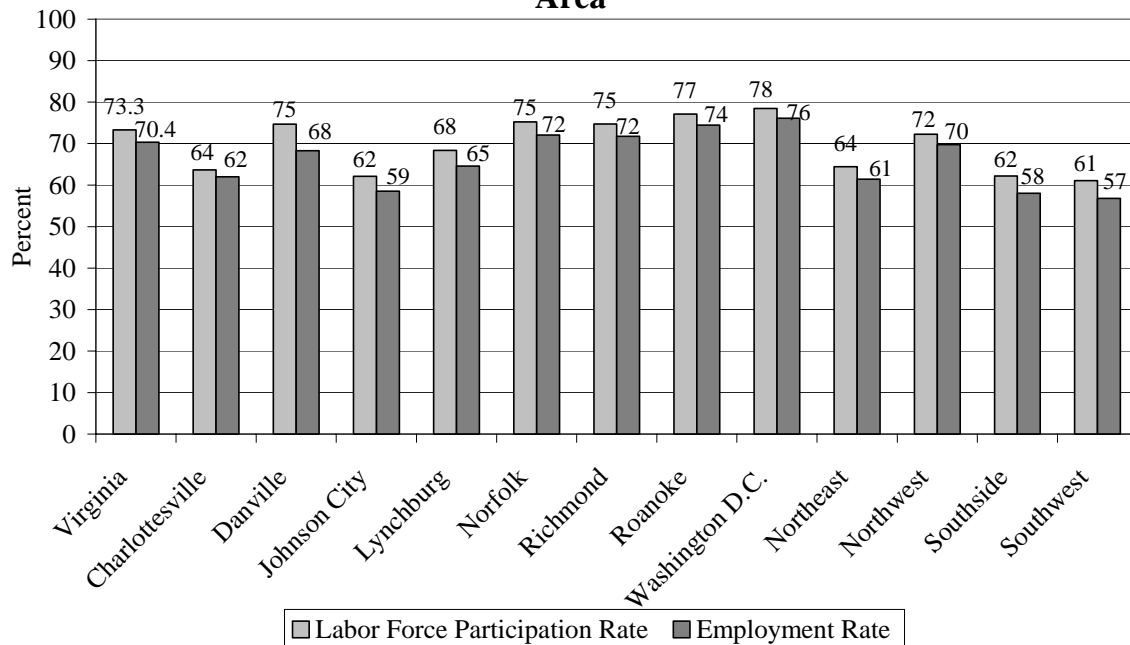
Source: Authors' tabulations from the 1990 and 2000 Census, U.S. Census Bureau.

Exhibit 10
Percent of Minority Population in 2000 by Area



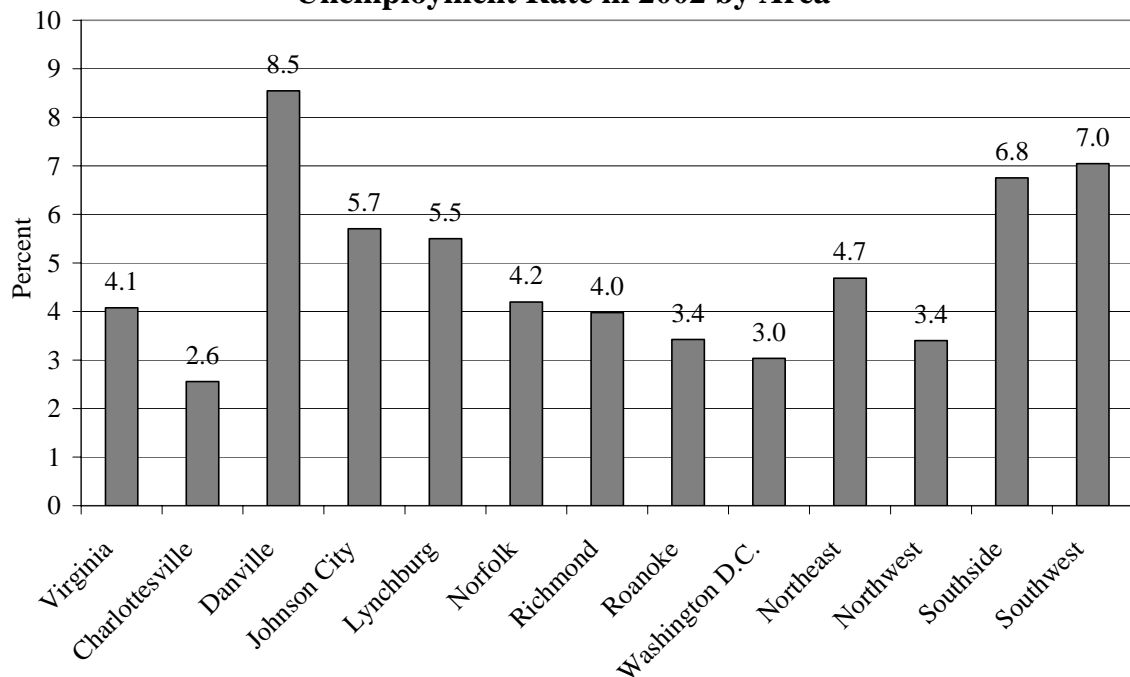
Source: Authors' tabulations from the 2000 Census, U.S. Census Bureau.

Exhibit 11
Labor Force Participation and Employment Rates in 2002 by Area



Source: Industry and Occupational Employment Projections: 1998 – 2008, Virginia Employment Commission.

Exhibit 12
Unemployment Rate in 2002 by Area



Source: Industry and Occupational Employment Projections: 1998 – 2008, Virginia Employment Commission.

Exhibit 13 Jobs in Demand in Virginia: 1998-2008 Top 25 occupations with the largest number of job openings	
<ul style="list-style-type: none"> • Cashiers¹ • Salespersons, Retail¹ • General Managers & Top Executives⁵ • General Office Clerks¹ • Waiters & Waitresses¹ • Systems Analysts⁴ • Combined Food Prep & Service Workers¹ • Helpers, Laborers & Movers, not elsewhere classified¹ • Teachers, Secondary School⁴ • Computer Support Specialists³ • Computer Programmers⁴ • Computer Engineers⁴ • Janitors & Cleaners¹ 	<ul style="list-style-type: none"> • Food Preparation Workers¹ • Registered Nurses³ • Receptionists & Information Clerks¹ • Teachers, Elementary⁴ • Hand Packers & Packagers¹ • Prof, Paraprof, Technicians, not elsewhere classified² • Secretaries, Except Legal or Medical² • Guards¹ • Nursing Aides & Orderlies¹ • Truck Drivers, Light¹ • Laborers, Landscapers, & Groundskeepers¹ • Telemarketers, Door-To-Door Sales¹

Source: Industry and Occupational Employment Projections: 1998 – 2008, Virginia Employment Commission.

¹ Short-term on-the-job training; ² Moderate-term on-the-job training; ³ Associate's degree;

⁴ Bachelor's degree; ⁵ College degree plus work experience

Exhibit 14 Declining Jobs in Virginia: 1998-2008 Top 25 occupations with the largest decrease in number of jobs	
<ul style="list-style-type: none"> • Sewing Machine Operators, Garment² • Textile Machine Operators/Tenders² • Farm Equipment Operators¹ • Computer Operators, Ex Peripheral² • Agriculture, Forestry, Fishing Workers, not elsewhere classified¹ • Production Inspectors, Graders² • Typists, Including Word Processing² • Child Care Workers, Private¹ • Station Installers & Repairers, Telephone⁵ • Bank Tellers¹ • Inspectors, Testers, Graders, Precision² • Directory Assistance Operators¹ • Peripheral EDP Equipment Operators² 	<ul style="list-style-type: none"> • Textile Machine Setters/Oprs² • Woodworking Machine Ops/Tenders, Ex Sawing² • Procurement Clerks¹ • Switchboard Operators¹ • Railroad Brake, Signal & Switch Operators⁴ • Helpers: Electricians & Related¹ • Transportation Attendants¹ • Machine Tool Cutting Operators, M/P² • Offset Lithographic Press Operators² • Butchers & Meatcutters, Retail³ • Roof Bolters, Mining² • Typesetting & Composing Machine Ops² • Telemarketers, Door-To-Door Sales¹

Source: Industry and Occupational Employment Projections: 1998 – 2008, Virginia Employment Commission

¹ Short-term on-the-job training; ² Moderate-term on-the-job training; ³ Long-term on-the-job training; ⁴ Work experience in a related occupation; ⁵ Postsecondary vocational award

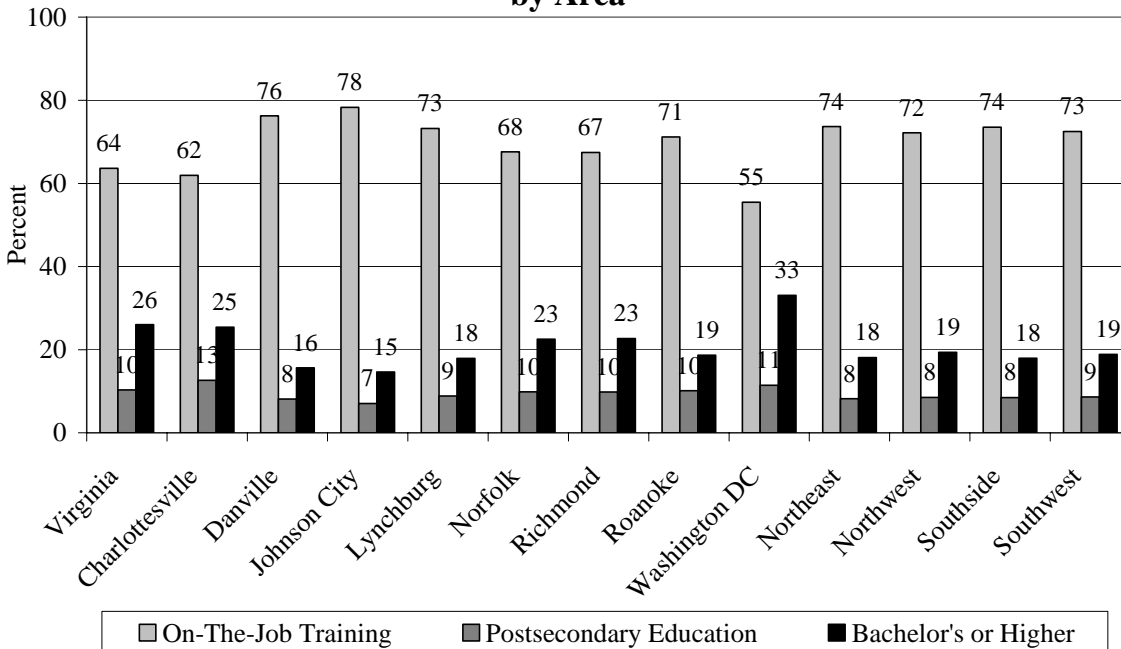
Exhibit 15

Virginia Distribution of Occupations by Job Qualifications, 2008

Job Qualification	Projected Employment 2008	Percent of Total Employment 2008	Projected Job Openings 2008	Percent of Total Job Openings 2008
On-the-job training or work experience	2,565,603	64.4 %	96,777	63.7 %
Short-term on-the-job training (0-1 month of on-the job instruction e.g. cashiers, waiter, janitor, food prep worker, taxi driver)	1,578,276	39.6	65,873	43.3
Moderate-term on-the-job training (1-12 months of on-job training e.g. bookkeeping, painter, coaches, roofers)	602,973	15.1	18,090	11.9
Long-term on-the-job training (More than 12 months of on-job training e.g. farmers, carpenters, cooks, plumbers, plasterers)	249,233	6.3	8,026	5.3
Work experience in related occupation (Requires supervisory experience e.g. sales worker supervisor, blue collar supervisors, police)	135,121	3.4	4,788	3.1
Postsecondary education or training below a bachelor's degree	408,143	10.2	15,695	10.3
Postsecondary vocational training (Programs usually result in a license or proficiency examination e.g. secretaries, hairdresser, welders, data entry)	160,346	4.0	5,647	3.7
Associate degree (At least 2 years of full-time study e.g. nurse, electronic technician, paralegals)	247,797	6.2	10,048	6.6
Bachelor's degree or higher	1,011,754	25.4 %	39,556	26.0 %
Bachelor's degree (At least 4 years of full-time study e.g. social workers, insurance sales, accountants, engineers)	592,643	14.9	24,565	16.2
Work experience, plus a bachelor's or higher degree (Experience in a related nonmanagerial position e.g. managers, judges, government executives)	285,684	7.2	9,593	6.3
Master's degree (1-2 years full-time beyond bachelor's e.g. teachers, librarians, social scientists)	61,438	1.5	2,534	1.7
Doctoral degree (3 years full-time beyond bachelor's e.g. college faculty & scientist)	29,699	0.7	1,380	0.9
First Professional degree (6 years of full-time study. e.g. lawyer, clergy & physician)	42,290	1.1	1,484	1.0
Total	3,985,500	100%	152,028	100%

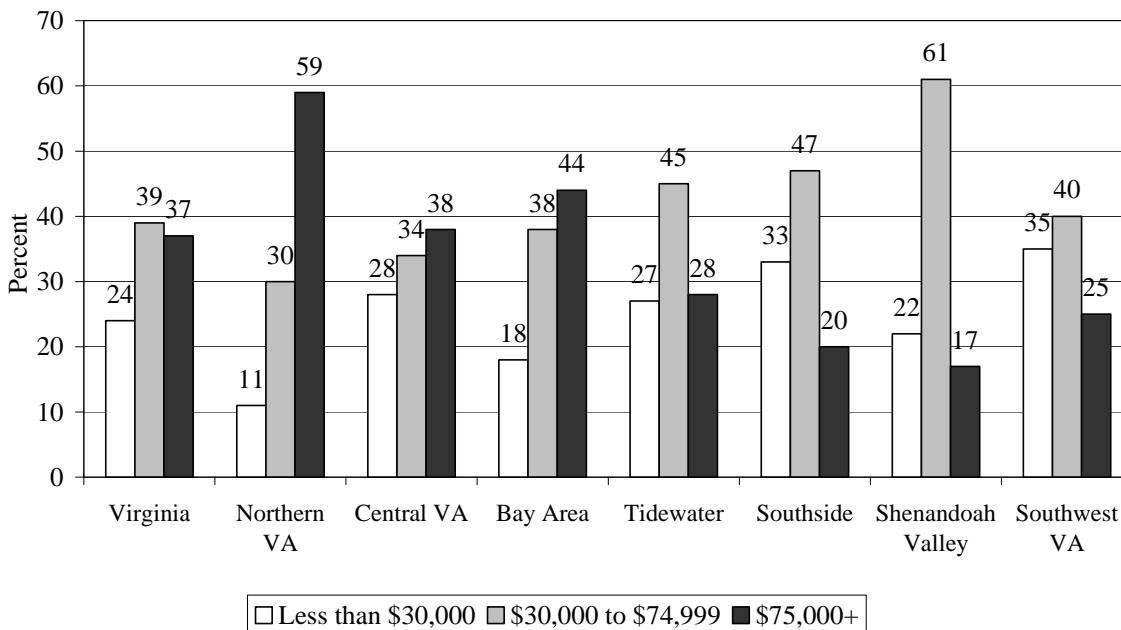
Source: Authors' tabulations are based on 2008 occupational projections data from the Virginia Employment Commission and occupational skill classifications from the United States Bureau of Labor Statistics.

Exhibit 16
Training Level of Projected Job Openings from 2003 to 2008
by Area



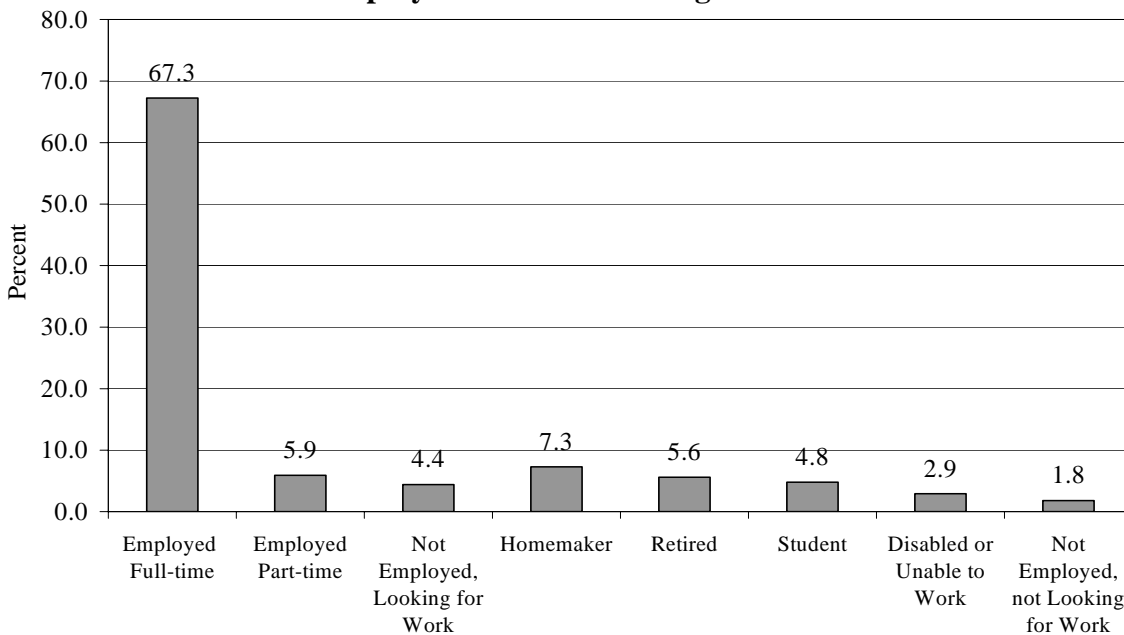
Source: Authors' tabulations from population data provided by the Virginia Employment Commission.

Exhibit 17
Annual Household Income of Virginia's Population by Region



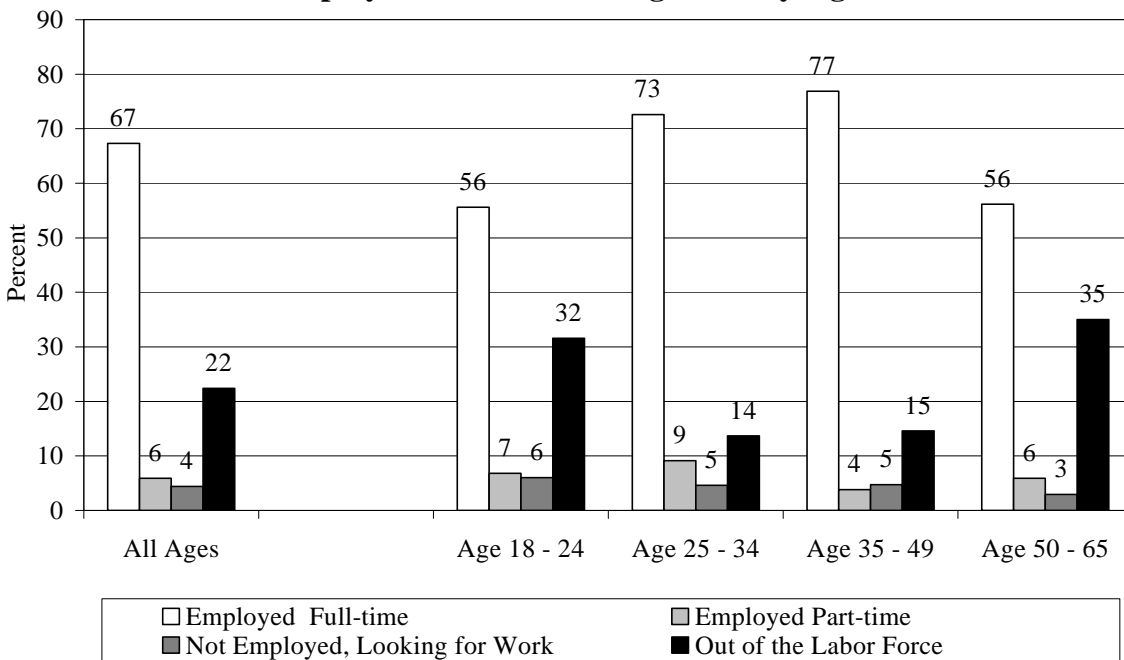
Source: Authors' tabulations from August 2003 weighted survey data collected by The Gallup Organization.

Exhibit 18
Employment Status of Virginians



Source: Authors' tabulations from August 2003 weighed survey data collected by The Gallup Organization.

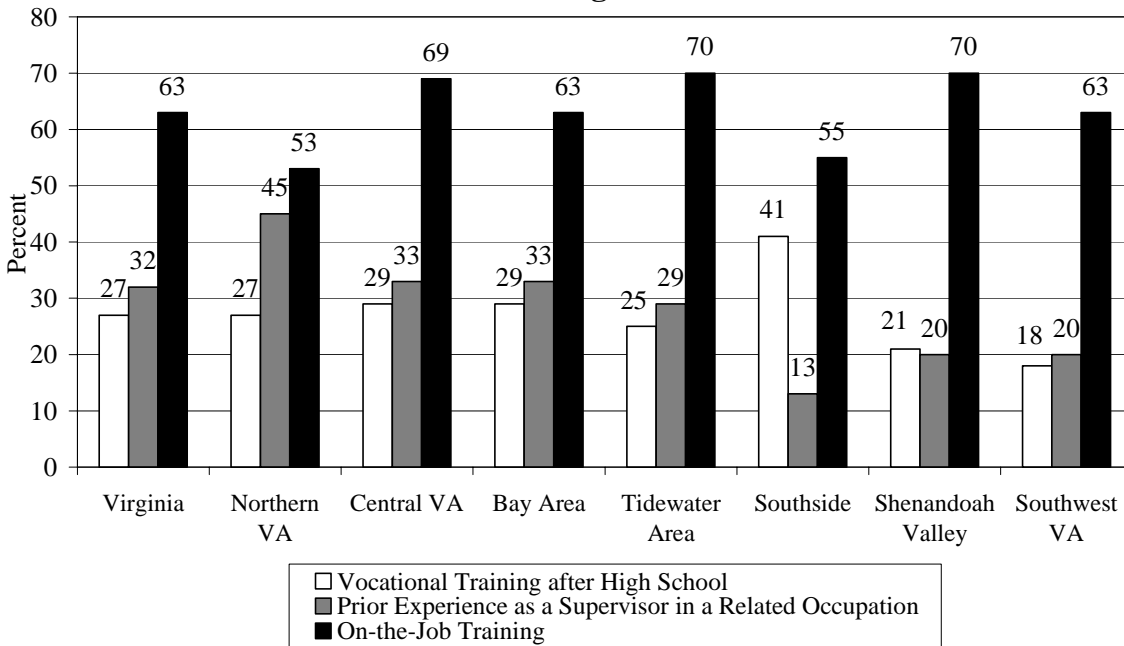
Exhibit 19
Employment Status of Virginians by Age



Note: "Out of the labor force" includes homemakers, students, retired, unable to work or disabled, and those who are not employed and not looking for work.

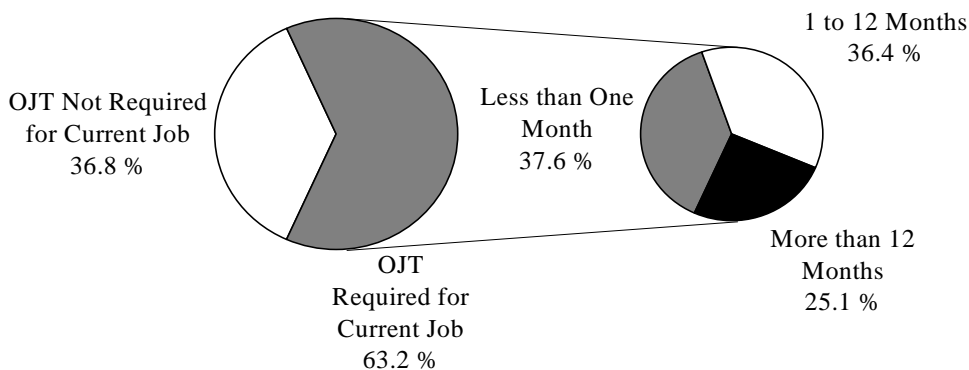
Source: Authors' tabulations from August 2003 weighted survey data collected by The Gallup Organization.

Exhibit 20
Training Required by Current Job for Workers in Virginia by Region



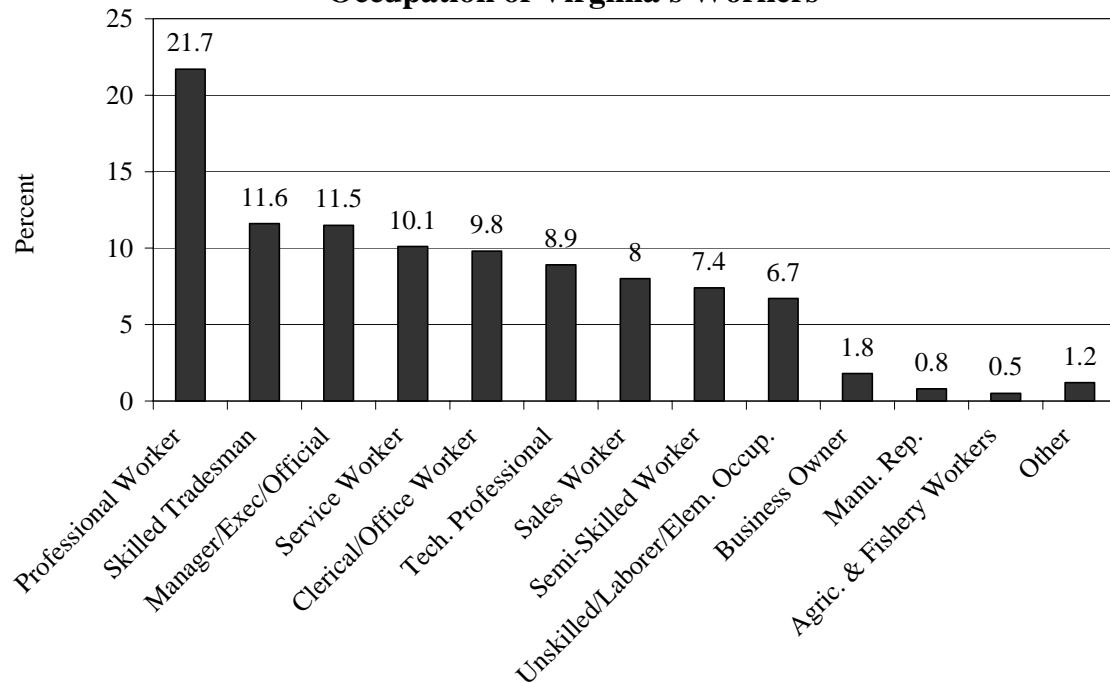
Note: Sum of bars does not equal 100 percent as respondents may answer 'yes' to more than one category.
 Source: Authors' tabulations from August 2003 weighted survey data collected by The Gallup Organization.

Exhibit 21
On-the-Job Training Required by Current Job for Workers in Virginia



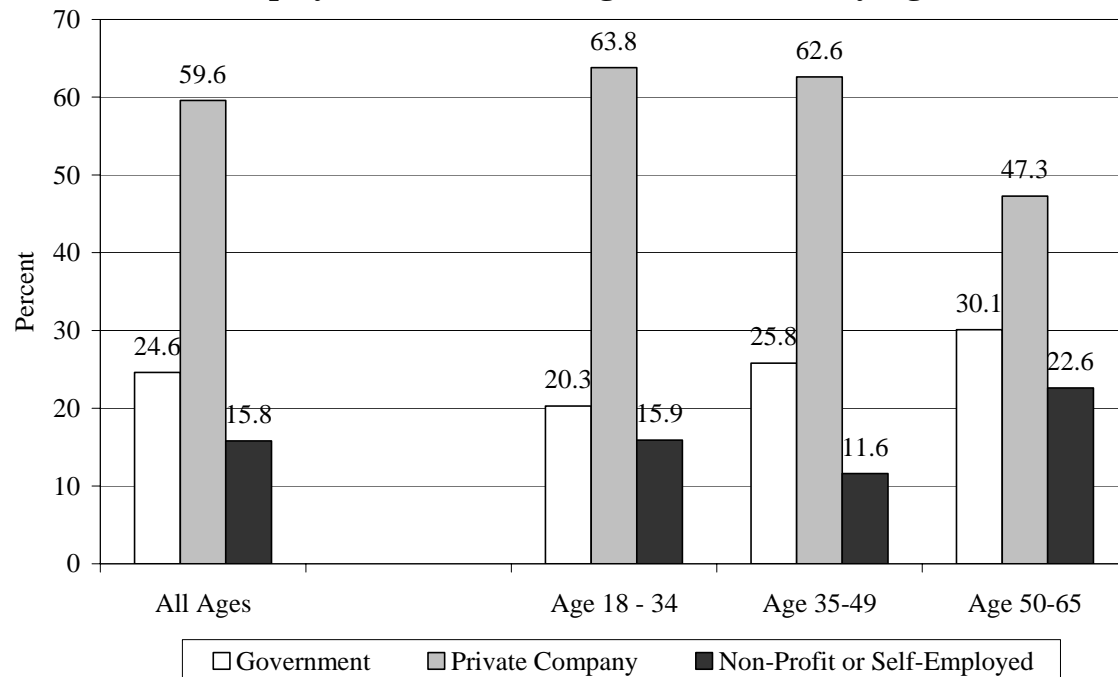
Source: Authors' tabulations from August 2003 weighted survey data collected by The Gallup Organization.

Exhibit 22
Occupation of Virginia's Workers



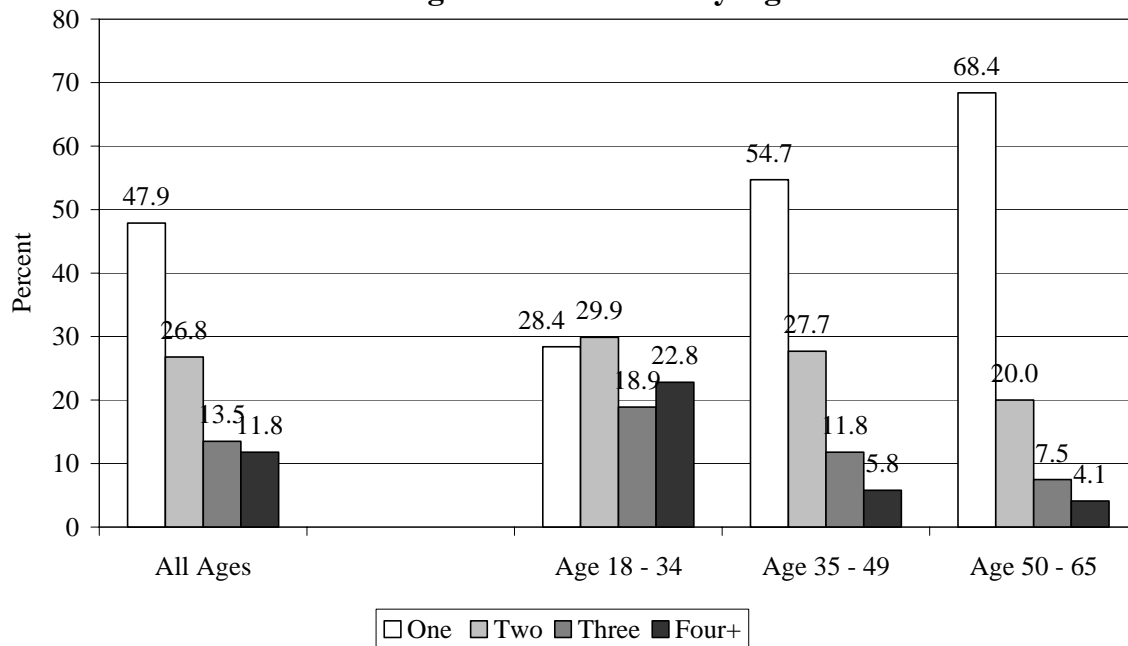
Source: Authors' tabulations from August 2003 weighted survey data collected by The Gallup Organization.

Exhibit 23
Employment Sector of Virginia's Workers by Age



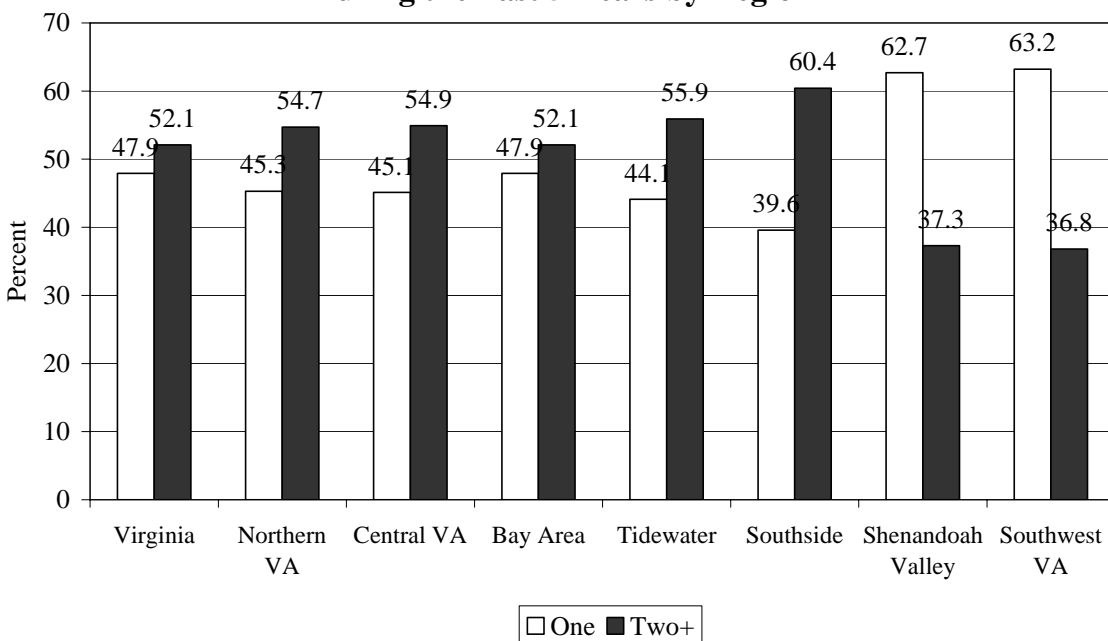
Source: Authors' tabulations from August 2003 weighted survey data collected by The Gallup Organization.

Exhibit 24
Characteristics of Workers in Virginia: Number of Jobs Held
During the Past 5 Years by Age



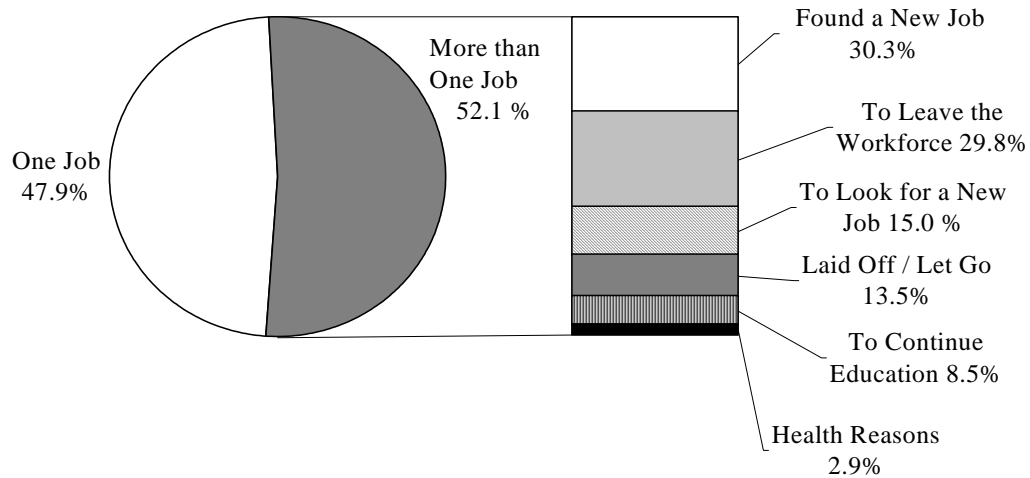
Source: Authors' tabulations from August 2003 weighted survey data collected by The Gallup Organization.

Exhibit 25
Characteristics of Workers in Virginia: Number of Jobs Held
During the Past 5 Years by Region



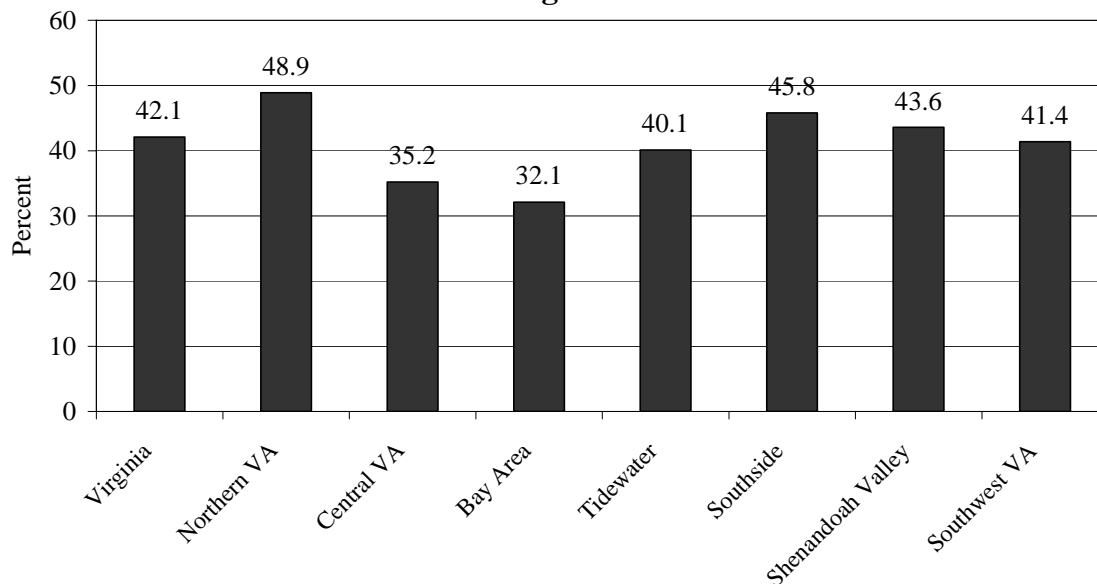
Source: Authors' tabulations from August 2003 weighted survey data collected by The Gallup Organization.

Exhibit 26
Characteristics of Workers in Virginia: Reason for Leaving Last Job



Source: Authors' tabulations from August 2003 weighted survey data collected by The Gallup Organization.

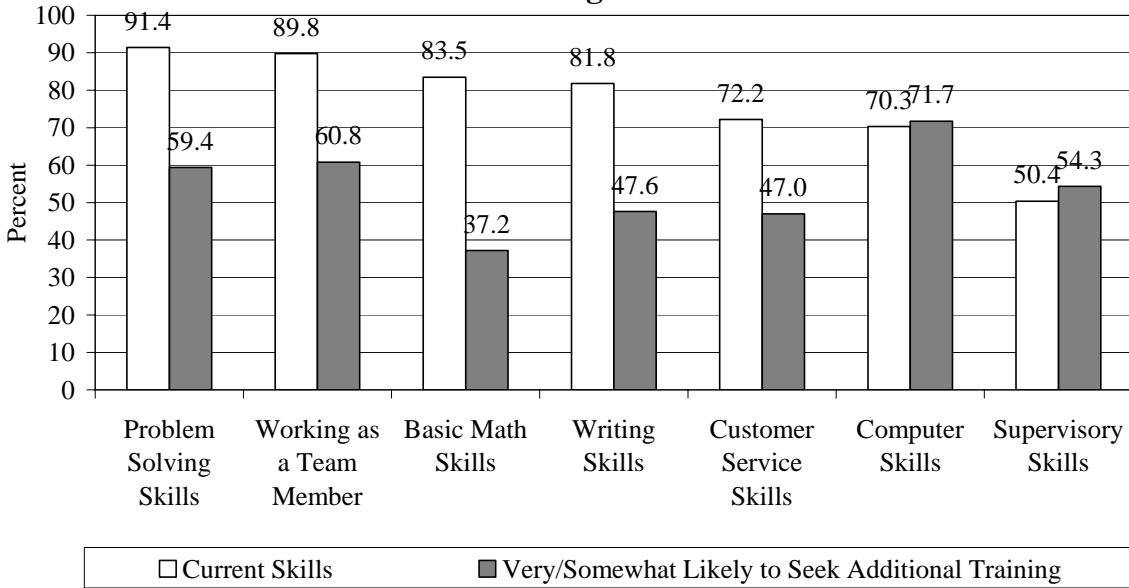
Exhibit 27
Characteristics of Workers in Virginia: Those Who Are Very/Somewhat Interested in a Job Sharing Arrangement by Region



Note: For the purposes of this study, job sharing is defined as when some employees share the same job and work part-time and receive some or all of the benefits that would be available if they worked full-time.

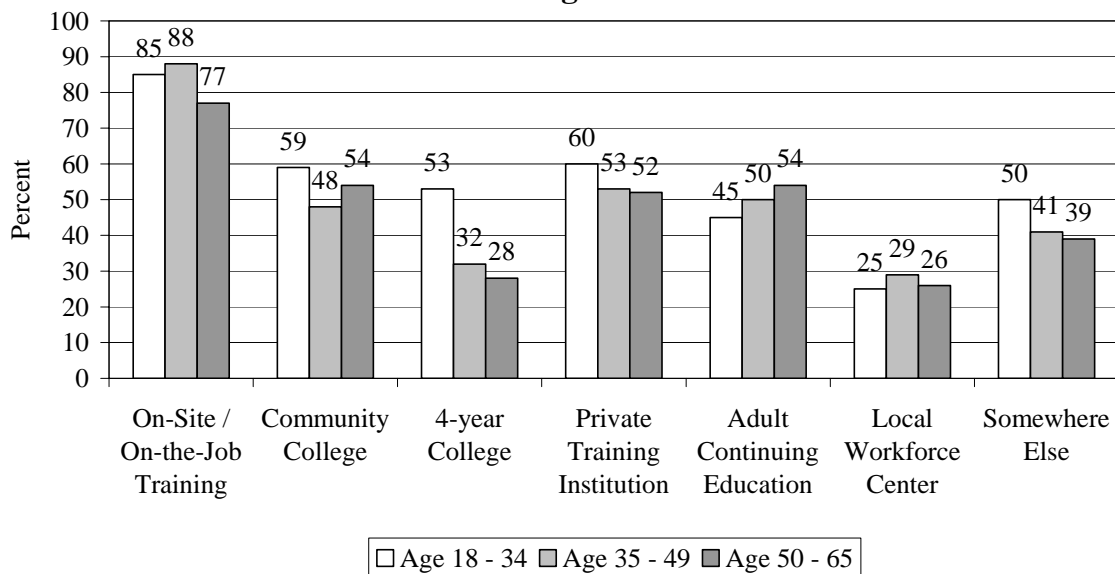
Source: Authors' tabulations from August 2003 weighted survey data collected by The Gallup Organization.

Exhibit 28
Characteristics of Workers in Virginia: Skills Required by
Current Job and Those Who Are Very/Somewhat Likely to
Seek Additional Training in the Next 5 Years



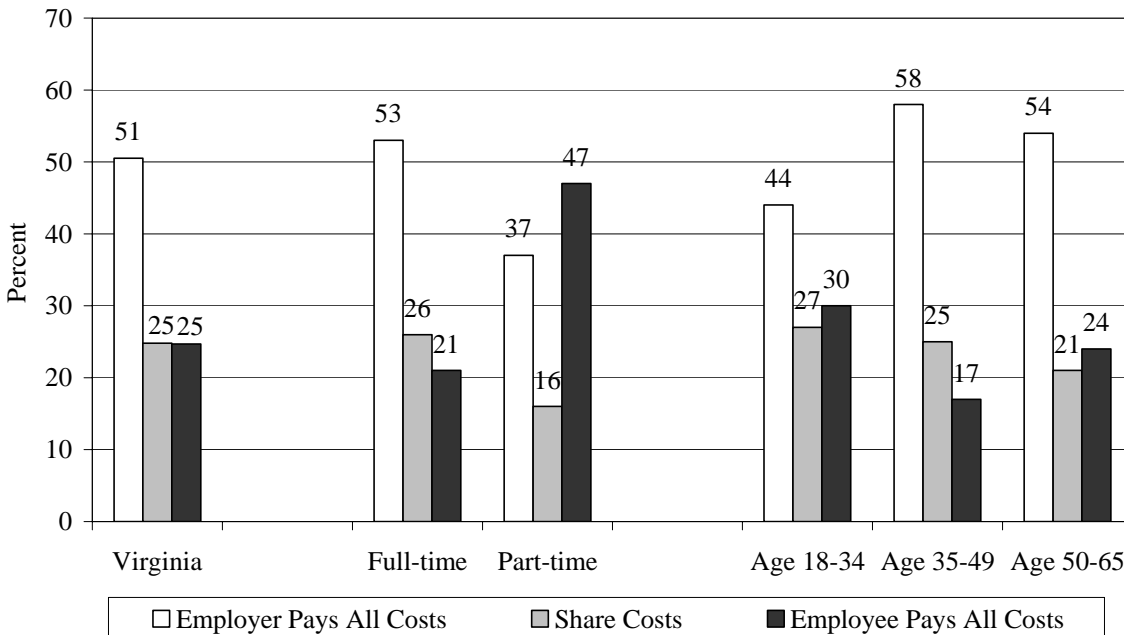
Source: Authors' tabulations from August 2003 weighted survey data collected by The Gallup Organization.

Exhibit 29
Where Virginia Workers Who Are Very/Somewhat Likely to
Seek Additional Training Would Seek Additional Training by
Age



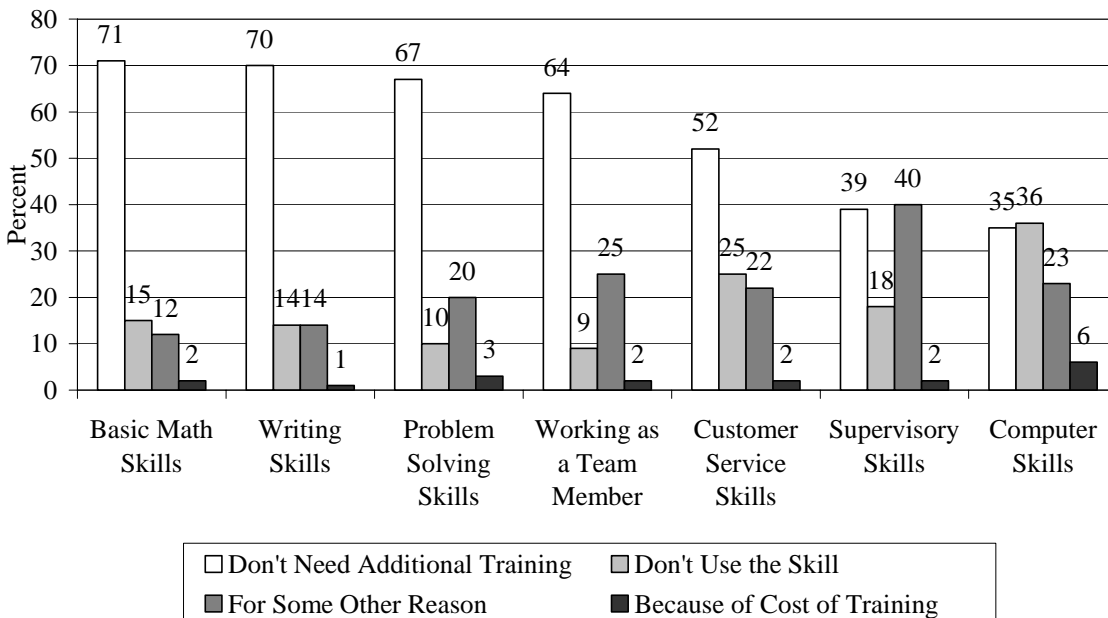
Source: Authors' tabulations from August 2003 weighted survey data collected by The Gallup Organization.

Exhibit 30
Characteristics of Workers in Virginia: Who Would Pay for Additional Training by Full- and Part-time Status and Age

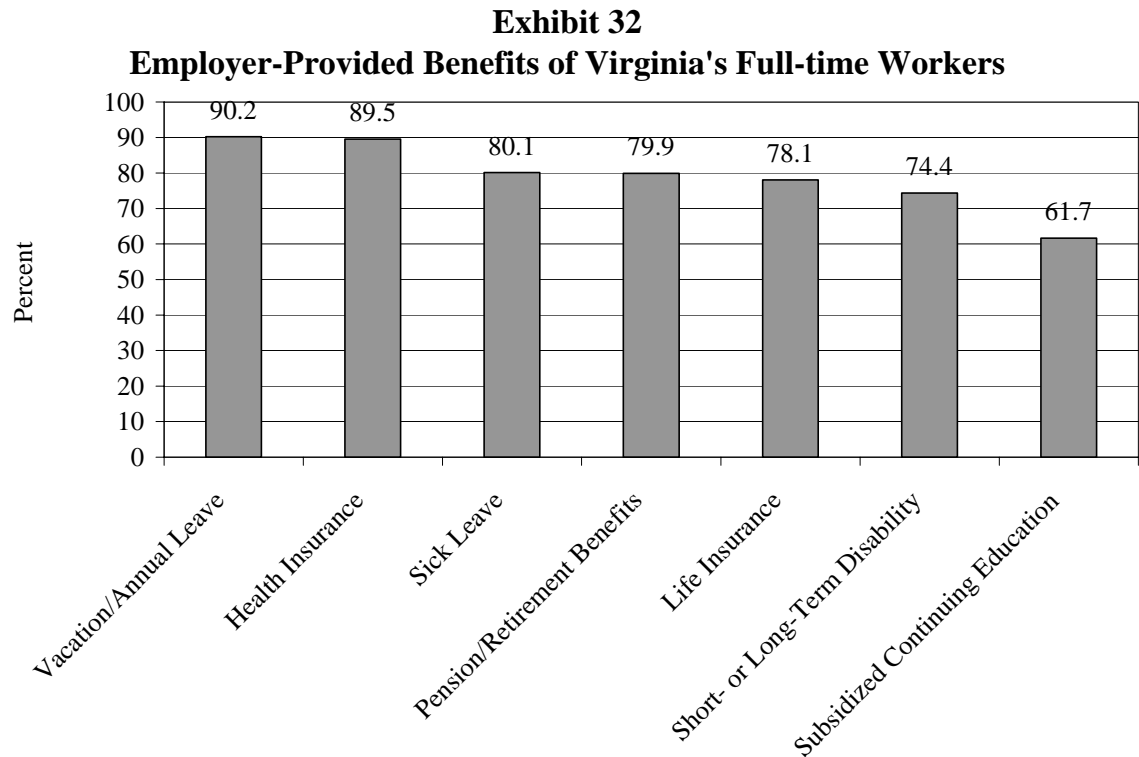


Source: Authors' tabulations from August 2003 weighted survey data collected by The Gallup Organization.

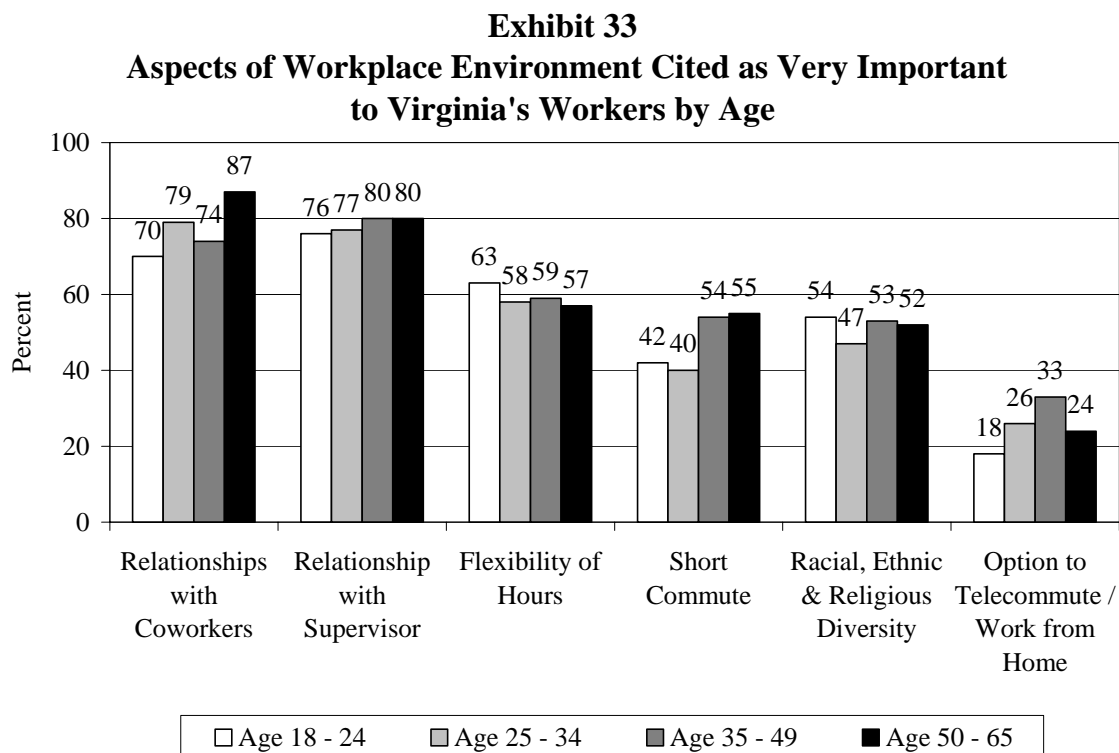
Exhibit 31
Why Virginia Workers Who Are Not Likely to Seek Additional Training Would Not Seek Training by Skill



Source: Authors' tabulations from August 2003 weighted survey data collected by The Gallup Organization.

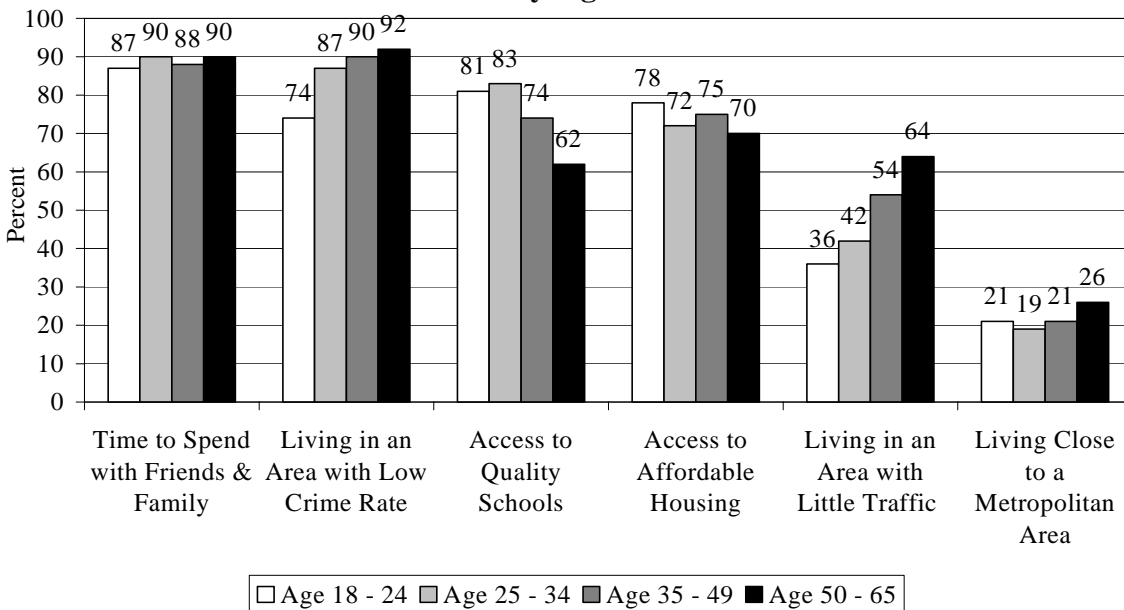


Source: Authors' tabulations from August 2003 weighted survey data collected by The Gallup Organization.



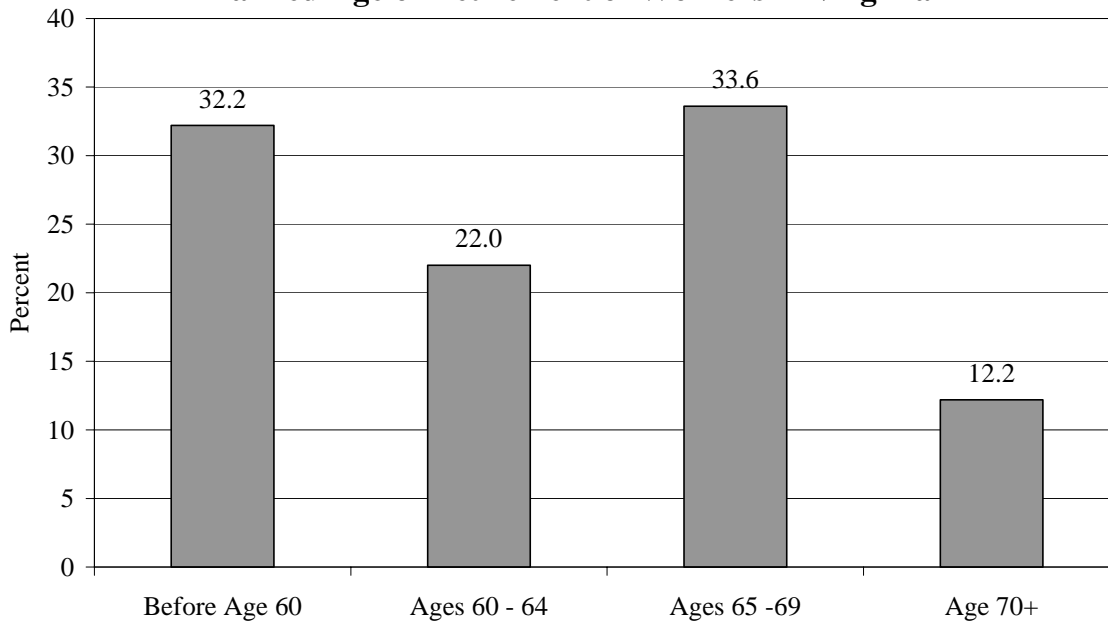
Source: Authors' tabulations from August 2003 weighted survey data collected by The Gallup Organization.

Exhibit 34
Quality of Life Issues Cited as Very Important to Virginians
by Age



Source: Authors' tabulations from August 2003 weighted survey data collected by The Gallup Organization.

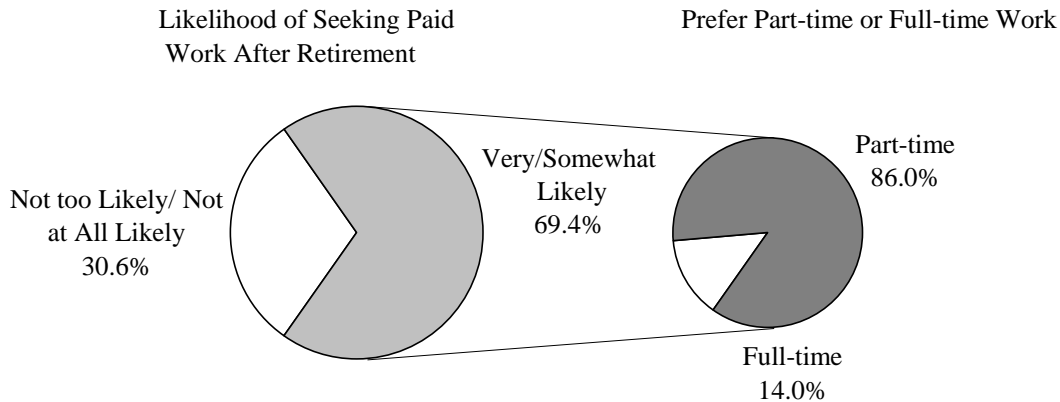
Exhibit 35
Planned Age of Retirement of Workers in Virginia



Note: The age of planned retirement was asked of currently employed Virginians, students, or those who are not employed but looking for work.

Source: Authors' tabulations from August 2003 weighted survey data collected by The Gallup Organization.

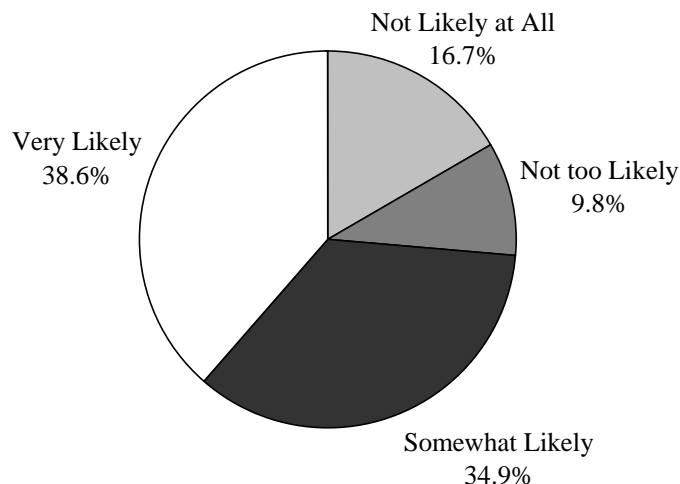
Exhibit 36
The Next 5 Years: Future Work Plans of Virginians Who Plan to Retire in 10 Years or Less



Note: The likelihood of seeking paid work after retirement was asked of currently employed Virginians, students, or those who are not employed but looking for work and who said they plan to retire within the next 10 years.

Source: Authors' tabulations from August 2003 weighted survey data collected by The Gallup Organization.

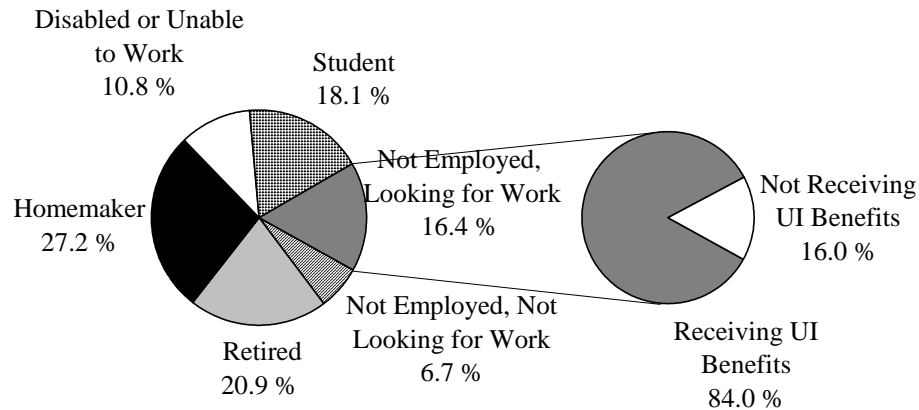
Exhibit 37
Likelihood of Taking Phased Retirement if Offered by Employer



Note: The likelihood of taking phased retirement if offered by their employer was asked of currently employed Virginians, students, or those who are not employed but looking for work and who said they plan to retire within the next 15 years.

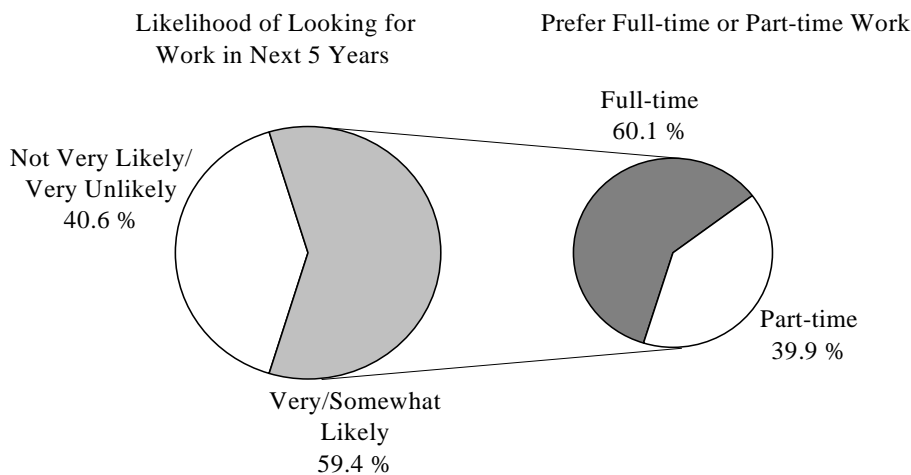
Source: Authors' tabulations from August 2003 weighted survey data collected by The Gallup Organization.

Exhibit 38
Characteristics of Non-Workers in Virginia: Receipt of
Unemployment Insurance Benefits



Source: Authors' tabulations from August 2003 weighted survey data collected by The Gallup Organization.

Exhibit 39
Characteristics of Non-Workers in Virginia :
Likelihood of Looking for Work in the Next 5 Years &
Preference for Full- or Part-time Work



Source: Authors' tabulations from August 2003 weighted survey data collected by The Gallup Organization.
 Note: In this exhibit, "non-workers" includes homemakers, students, disabled or unable to work, those not employed but looking, and those not employed but not looking. Retirees are excluded.

IX. Appendices

Appendix A: Defining Virginia's 8 MSA and 4 non-MSA Areas

Appendix B: Defining Virginia's 7 Regions for the Telephone Survey Data Analyses

Appendix C: Telephone Survey Methodology: Sampling and Weighting

Appendix D: Final Telephone Survey Instrument

Appendix E: Richmond, Abingdon, and Washington, DC Forum Attendees

Appendix F: Supplementary Exhibits

Appendix A: Defining Virginia's 8 MSA and 4 Non-MSA Areas

Charlottesville MSA

Albemarle County
Fluvanna County
Greene County
Charlottesville City

Danville MSA

Pittsylvania County
Danville City

Johnson City-Kingsport- Bristol, TN-VA MSA (Virginia Portion)

Scott County
Washington County
Bristol City

Lynchburg MSA

Amherst County
Bedford County
Campbell County
Bedford City
Lynchburg City

Norfolk-Virginia Beach- Newport News, VA-NC MSA (Virginia Portion)

Gloucester County
Isle of Wight County
James City County
Mathews County
York County
Chesapeake City
Hampton City
Newport News City
Norfolk City
Poquoson City
Portsmouth City
Suffolk City
Virginia Beach City
Williamsburg City

Richmond-Petersburg MSA

Charles City County
Chesterfield County
Dinwiddie County
Goochland County
Hanover County
Henrico County
New Kent County
Powhatan County
Prince George County
Colonial Heights City
Hopewell City
Petersburg City
Richmond City

Roanoke MSA

Botetourt County
Roanoke County
Roanoke City
Salem City

Washington

DC-MD-VA-WV PMSA (Virginia Portion)

Arlington County
Clarke County
Culpeper County
Fairfax County
Fauquier County
King George County
Loudoun County
Prince William County
Spotsylvania County
Stafford County
Warren County
Alexandria City
Fairfax City
Falls Church City
Fredericksburg City
Manassas City
Manassas Park City

Northeast Virginia

Accomack County
Caroline County
Essex County
King & Queen County
King William County
Lancaster County
Middlesex County
Northampton County
Northumberland County
Richmond County
Westmoreland County

Northwest Virginia

Alleghany County
Augusta County
Bath County
Frederick County
Highland County
Louisa County
Madison County
Nelson County
Orange County
Page County
Rappahannock County
Rockbridge County
Rockingham County
Shenandoah County
Buena Vista City
Clifton Forge City
Covington City
Harrisonburg City
Lexington City
Staunton City
Waynesboro City
Winchester City

Southside Virginia

Amelia County
Appomattox County
Brunswick County
Buckingham County
Charlotte County
Cumberland County
Greensville County
Halifax County
Lunenburg County
Mecklenburg County
Nottoway County
Prince Edward County
Southampton County
Surry County
Sussex County
Emporia City
Franklin City

Southwest Virginia

Bland County
Buchanan County
Carroll County
Craig County
Dickenson County
Floyd County
Franklin County
Giles County
Grayson County
Henry County
Lee County
Montgomery County
Patrick County
Pulaski County
Russell County
Smyth County
Tazewell County
Wise County
Wythe County
Galax City
Martinsville City
Norton City
Radford City

Appendix B: Defining Virginia's 7 Regions for the Telephone Survey Data Analyses

Northern Virginia

Arlington County
Fairfax County
Loudon County
Prince William County
Alexandria City
Fairfax City
Falls Church City
Manasses City
Manasses Park City

Central Virginia

Albemarle County
Amherst County
Bedford County
Campbell County
Charles City County
Chester County
Culpepper County
Fauquier County
Fluvanna County
Greene County
Hanover County
Henrico County
Louisa County
Madison County
Nelson County
New Kent County
Orange County
Powhatan County
Rappahannock County
Bedford City
Lynchburg City
Charlottesville City
Richmond City

Bay Area

Accomack County
Caroline County
Essex County
Gloucester County
King and Queen County
King George County
King William County
Lancaster County
Matthews County
Middlesex County
Northampton County
Northumberland County
Richmond County
Spotsylvania County
Stafford County
Westmoreland County
Fredericksburg City

Tidewater Area

Isle of Wight County
James City County
Southampton County
York County
Chesapeake City
Franklin City
Hampton City
Newport News City
Norfolk City
Poquoson City
Portsmouth City
Suffolk City
Virginia Beach City
Williamsburg City

Southside

Amelia County
Appomattox County
Brunswick County
Buckingham County
Charlotte County
Cumberland County
Dinwiddie County
Greensville County
Halifax County
Henry County
Lunenburg County
Mecklenburg County
Nottoway County
Patrick County
Pittsylvania County
Prince Edward County
Prince George County
Surry County
Sussex County

Shenandoah Valley

August County
Bath County
Clarke County
Frederick County
Highland County
Page County
Rockingham County
Shenandoah County
Warren County
Buena Vista City
Harrisonburg City
Lexington City
Staunton City
Waynesboro City
Winchester City

Southwest Virginia

Alleghany County
Bland County
Botetourt County
Buchanan County
Carroll County
Craig County
Dickenson County
Floyd County
Franklin County
Giles County
Grayson County
Lee County
Montgomery County
Pulaski County
Roanoke County
Rockbridge County
Russell County
Scott County
Smyth County
Tazewell County
Washington County
Wise County
Wythe County
Bristol City
Clifton Forge City
Covington City
Galax City
Norton City
Radford City
Roanoke City
Salem City

Appendix C: Telephone Survey Methodology: Sampling and Weighting

The Urban Institute contracted with the Gallup Organization to conduct a telephone survey of 1,000 individuals statewide of the non-institutionalized adult population age 18-65 residing in Virginia. The Urban Institute designed and drafted the 12-minute survey instrument in conjunction with Gallup. The telephone survey gathered opinion data from individuals about their (1) current employment (e.g., full- or part-time) and skills, (2) future employment and training needs, (3) their plans for working or retiring in Virginia in the future (e.g., phased retirement, post-retirement employment), (4) work-related quality of life needs and preferences (e.g., benefit needs, retirement needs, workplace environment needs), and (5) demographic information for 2003.

The Gallup Organization obtained 1,004 completed cases during the five-week field period of July 28, 2003 to August 29, 2003. The following are statistics from the survey:

- Total numbers dialed: 5,299
- Incidence rate: 77 percent (percent eligible to participate)
- Working residential number rate: 61 percent (percent of numbers that were not business or disconnects)
- Refusal rate: 5 percent
- Number of completes: 1,004
- Response rate:¹ 40 percent

Sampling

The sampling frame used for this telephone survey was a directory-based frame. The directory-based frame yields a significantly higher rate of working residential numbers (WRNs). Samples drawn from such lists do not include unlisted (or unpublished) telephone numbers, and studies of telephone households with and those without published numbers suggest that estimates based on such samples may be biased.

A telephone number in the United States is 10 digits long (AAA EEE XXXX), where the first three digits are the area code, the second three are the exchange, and the last four are the

¹ The response rate calculation is based on the standard CASRO definition (Council of American Survey Research Organizations).

number within the exchange. The area code, three-digit prefix and the first two digits of the four-digit suffix specify a 100-bank containing 100 telephone numbers. Following the Casady-Lepkowski (1993) truncated design, Gallup drew an RDD (Random Digit Dialing) sample of specified size from the high-density stratum.

Gallup obtained a sample of telephone numbers and divided the sample into systematic random sub samples called “replicates.” Gallup used approximately 5,299 household telephone numbers, large enough to yield the required number (1,000) of interviews with a high response rate (yielded a 40 percent response rate, a 61 percent working residential number rate, and a 77 percent eligibility rate). The replicates were used to control the sample and to maintain flexibility while ensuring high response rates. Gallup released replicates sequentially using sample release specifications prepared by the Study Director. The Study Director and Senior Statistician monitored the release of replicates based on internal call status reports accessed online daily. This procedure allowed interviewing supervisors to maintain a high response rate.

Gallup ordered 10,000 telephone numbers from SSI, yielding about 7,000 numbers after screening out the known Disconnects and Business numbers. After sampling a telephone household, Gallup selected one adult from all adults living in the sampled household. When more than one household member was eligible for a survey, the adult with the ‘most recent birthday’ was selected to be surveyed.

Gallup used a 5+5 call design to complete the interviews, meaning that 5 attempts were made to contact a household, and upon contact, up to an additional 5 attempts will be made to seek cooperation.

Gallup pretested the questionnaire with nine random survey respondents to assess the effectiveness and performance of the instrument at meeting the study requirements. Minor changes were made to the instrument based on the pretest and one new question was added.

Weighting

The survey data collected are weighted by Gallup to make the total weighted count of 4,597,000 match the target 18-65 population size within the following domains of interest:

- Age (18-24, 25-34, 35-44, and 45-65),
- Race and ethnicity (non-Hispanic white, non-Hispanic black, and others),
- Gender, and

- Seven regions of Virginia (see Appendix B for a definition of the seven regions).

The sample data were weighted to compose estimates. Sampling weights were attached to each survey record and the final weight assigned to any case was the product of the weights generated at several stages of the weighting process. The first step was to construct the base-weight, the inverse of the probability of selection. This was to correct for unequal selection probabilities of the different units in the sample. In this study, the selection probability at the very first stage of selection (of telephone numbers) was the same. However, the difference in the number of residential telephone lines reaching different telephone households created unequal selection probabilities at the household level. Within a household, the number of adults living in the household obviously varied resulting in different selection probabilities. The base-weight (w_i) assigned to the i^{th} ($i=1, 2, \dots, n$) sampled unit was calculated as $w_i = (a_i / t_i)$ where a_i was the number of eligible adult members (between the ages of 18 and 65) living in respondent's household and t_i the number of residential telephone lines reaching that household. To reduce variability in the base weights, the values of a_i and t_i were truncated at 3 and 2 respectively after examining the distribution of these variables in the sample.

The next step was post-stratification weighting to make the sample reflect the population it is intended to represent. Post-stratification is a way of improving estimators by proper utilization of ancillary information. The state of Virginia was divided into seven geographic regions – Northern Virginia, Central Virginia, Bay Area, Tidewater Area, Southside, Shenandoah Valley, and Southwest Virginia. (Please refer to Appendix B for definitions of these regions in terms of counties and independent cities.) Within each of these seven regions, post-stratification weights were created so that the final weighted distribution of the sample data for the variables age, gender, and race/ethnicity matched, to the extent possible, the corresponding distributions (population distributions) of those variables in each region. This was achieved using a raking program for simultaneous adjustment of different target numbers (or proportions). The target numbers (or population distributions) for each region were obtained from the latest U.S. Census data for the state of Virginia. For the variable Age, the distribution was adjusted for the following age groups: 18-24, 25-34, 35-44, and 45-65. For race/ethnicity, three different racial and ethnic groups (non-Hispanic white, non-Hispanic African American, and others) were considered.

After the post-stratification process, the distribution of the sampling weights was examined within each region to see if any trimming of extreme weights was necessary. As mentioned before, the number of telephone lines and the number of adults were truncated for constructing base weights. There were very few relatively large weights after the post-

stratification stage. Within each region, weights outside the $\{\text{Mean} \pm 3 * (\text{standard deviation})\}$ limits were truncated. The trimming of weights, therefore, was minimal and had no significant effect on the overall distribution of weights. Finally, within each region, the trimmed weights were multiplied by a projection factor so that the sum of weights within each region equaled the total adult population (between the ages of 18 and 65) for that region.

Appendix D: Final Telephone Survey Instrument

CRT

HARD COPY REQUIRED

FINANCE, URB58182

F182

FIELD FINAL - JULY 21, 2003
(Columns are ABSOLUTE)

Project Registration #139242

The Gallup Organization, Inc.

COMMONWEALTH OF VIRGINIA

_____ APPROVED BY CLIENT

City Center: Washington D.C.

Urban Institute Study

_____ APPROVED BY PROJECT MANAGER

Abraham/Miller-Steiger/Richter

Jane Wood, Specwriter

July, 2003

n=1000

I.D.#:

_____ (1- 6)

**AREA CODE AND TELEPHONE NUMBER:

_____ - _____
(649 - 658)

**INTERVIEW TIME:

_____ - _____
(716 - 721)

(NOTE: All interviews are recorded. The recording begins when the respondent answers the phone. This statement is read after the "Continue" response is entered after the Introduction and before the first question) This call will be recorded for quality assurance.

1 (Continue)

2 (Refused) - (Thank and Terminate)

_____ (984)

**DATE OF INTERVIEW: (Code from fone file)

_____ - _____
(935 - 938)

**ZIP CODE: (Code from fone file)

_____ - _____
(59 - 63)

Hello, this is _____, from The Gallup Poll. We are conducting a survey for the Commonwealth of Virginia about issues related to work so the state can improve employment and training policies. Let me assure you that the information you provide will be held in strict confidence and used only for statistical purposes.

(If respondent is reluctant, read:) Your participation is really important. The interview is short and the results will help Virginia improve opportunities for employment and training in the next few years. We're looking to speak with all kinds of Virginia residents, regardless of your employment status.

- 1 Respondent available - **(Continue)**
- 7 Respondent not available -
(Set time to call back)
- 8 (Soft Refusal)
- 9 (Hard Refusal) - **(Thank and Terminate)** _____(1001)

S1. Of the adults age 18 to 65 in your household, I need to speak to the one who had the most recent birthday. Would that be you?

- 1 Yes, respondent available **(Continue)**
- 4 No, ask to speak to that person **(Continue)**
- 5 No such person in household - **(Thank and Terminate)**
- 7 Respondent not available - **(Set time to call back)**
- 8 (Refused) - **(Thank and Terminate)** _____(1002)

(If code 4 in S1, Continue;
Otherwise, Skip to S2)

(If necessary, read:)

Hello, this is _____, from The Gallup Poll. We are conducting a survey for the Commonwealth of Virginia about issues related to work so the state can improve employment and training policies. Let me assure you that the information you provide will be held in strict confidence and used only for statistical purposes.

S2. What is your age? (If necessary, read:) This is to confirm that we are speaking with someone who is between the ages of 18 and 65. (Open ended and code actual age)

00 (Refused) - (PROBE ONCE, Then Reset to S1)

17 (Under age 17) - (Reset to S1)

66 (66 or older) (Reset to S1)

18-

65 (Continue)

(1003) (1004)

S3. In what county of Virginia do you live? If you live in a city and not a part of a county, please say so. (Open ended and code from hard copy) (If necessary, say:)
Where do you live most of the time?

01	Accomack	34	Frederick	66	Orange
02	Albemarle	35	Giles	67	Page
03	Alleghany	36	Gloucester	68	Patrick
04	Amelia	37	Goochland	69	Pittsylvania
05	Amherst	38	Grayson	70	Powhatan
06	Appomattox	39	Greene	71	Prince Edward
07	Arlington	40	Greensville	72	Prince George
08	Augusta	41	Halifax	73	Prince William
09	Bath	42	Hanover	74	Pulaski
10	Bedford	43	Henrico	75	Rappahannock
11	Bland	44	Henry	76	Richmond
12	Botetourt	45	Highland	77	Roanoke
13	Brunswick	46	Isle of Wight	78	Rockbridge
14	Buchanan	47	James City	79	Rockingham
15	Buckingham	48	King and Queen	80	Russell
16	Campbell	49	King George	81	Scott
17	Caroline	50	King William	82	Shenandoah
18	Carroll	51	Lancaster	83	Smyth
19	Charles City	52	Lee	84	Southampton
20	Charlotte	53	Loudoun	85	Spotsylvania
21	Chesterfield	54	Louisa	86	Stafford
22	Clarke	55	Lunenburg	87	Surry
23	Craig	56	Madison	88	Sussex
24	Culpeper	57	Mathews	89	Tazewell
25	Cumberland	58	Mecklenburg	90	Warren
26	Dickenson	59	Middlesex	91	Washington
27	Dinwiddie	60	Montgomery	92	Westmoreland
28	Essex	61	Nelson	93	Wise
29	Fairfax	62	New Kent	94	Wythe
30	Fauquier	63	Northampton	95	York
31	Floyd	64	Northumberland		
32	Fluvanna	65	Nottoway		
33	Franklin				
00	Live in city				
98	(DK)				
99	(Refused)				

(1005) (1006)

(If code 00 in S3, Continue;
If code 01-95 in S3, Skip to Read before #1;
Otherwise, Thank and Terminate)

S4. In what city do you live? (Open ended and code)

01	Alexandria	22	Manassas
02	Bedford	23	Manassas Park
03	Bristol	24	Martinsville
04	Buena Vista	25	Newport News
05	Charlottesville	26	Norfolk
06	Chesapeake	27	Norton
07	Clifton Forge	28	Petersburg
08	Colonial Heights	29	Poquoson
09	Covington	30	Portsmouth
10	Danville	31	Radford
11	Emporia	32	Richmond
12	Fairfax	33	Roanoke
13	Falls Church	34	Salem
14	Franklin	35	South Boston
15	Fredericksburg	36	Staunton
16	Galax	37	Suffolk
17	Hampton	38	Virginia Beach
18	Harrisonburg	39	Waynesboro
19	Hopewell	40	Williamsburg
20	Lexington	41	Winchester
21	Lynchburg		
98	(DK)		
99	(Refused)		

(1007) (1008)

(READ:) First I would like to ask you some questions about your employment status.

1. Which of the following best describes your current situation - are you employed full-time, employed part-time, retired, a homemaker, a student, unemployed but looking for work, or unemployed and not looking for work?

- 01 Employed full-time
- 02 Employed part-time
- 03 Retired
- 04 Homemaker
- 05 Student
- 06 Unemployed but looking for work
- 07 Unemployed and not looking for work
- 08 (Disabled/unable to work)
- 09 (Other) (do not list)
- 10 (DK)
- 11 (Refused)

(1301) (1302)

(If code 01 or 02 in #1, Continue;
If code 03 in #1, Skip to Note before #26;
Otherwise, Skip to Note before #16)

EMPLOYMENT AND BENEFITS (ASKED ONLY OF THOSE WHO ARE CURRENTLY EMPLOYED)

2. I'd like for you to think about your MAIN job, that is, the one where you spend the most time. In a typical week, do you work 30 hours or more at your MAIN job?

- 1 Yes
- 2 No
- 3 (DK)
- 4 (Refused)

_____(1303)

3. What kind of work do you do at this job, or what is your occupation? (Open ended and code from hard copy)

01 Other (list)

(If "self employed/owner" PROBE:) What type of work do you do or what type of business are you the owner of?

02 (DK)

03 (Refused)

04 HOLD

05 HOLD

06 Professional worker-lawyer, doctor, scientist, teacher, engineer, nurse, accountant, investment banker, stock brokerage, marketing, musician

07 Manager, Executive or Official-in a business, government agency, or other organization

08 Business Owner-such as a store, factory, plumbing contractor, etc.

09 Clerical or Office Worker-in business, government agency, or other type of organization--such as a typist, secretary, postal clerk, telephone operator, computer operator, data entry, bank clerk, etc.

10 Sales worker-clerk in a store, door-to-door salesperson, sales associate

11 Manufacturer's Representative-outside sales person, sales representative

12 Service worker-policeman/woman, fireman, waiter or waitress, maid, nurse's aide, attendant, barber or beautician, fast-food

13 Skilled Tradesman-printer, baker, tailor, electrician, machinist, linesman, railroad engineer, plumber, or does mechanical work such as garage mechanic, carpenter, etc.

14 Semi-skilled Worker-operates a machine in a factory, is an assembly line worker in a factory, drives a truck, taxi cab, or bus, etc.

15 Unskilled/Laborer/Elementary Occupations-plumber's helper, construction laborer, longshoreman, sanitation worker, maintenance, housekeeping, or other physical work

16 Technology professional-Web designer, network administrator, systems engineer, programmer, systems analyst, Internet, IT

17 Agriculture and Fishery Workers

(1304) (1305)

4. Is this job with the government, a private company, a non-profit organization, or are you self-employed?

- 1 Government
- 2 Private company
- 3 Non-profit organization (include tax exempt and charitable organizations)
- 4 Self-employed
- 5 (DK)
- 6 (Refused)

_____(1306)

5. How many jobs have you held in the past five years with different employers? Include both full-time and part-time positions. (Open ended and code)

- 0 None
- 1 One
- 2 Two
- 3 Three
- 4 Four
- 5 Five
- 6 More than five
- 7 (DK)
- 8 (Refused)

_____(1307)

(If code 2-6 in #5, Continue;
Otherwise, Skip to #7)

6. The last time you left a job, what was your reason for leaving that job? Was it **(read 1-6)**?

- 1 Because you found a new job
- 2 Because you wanted to look for a new job
- 3 Because you were laid off or let go for some other reason
- 4 So you could continue your education
- 5 Because of health reasons
- 6 Or was it to leave the workforce for some other reason (i.e. Retired, to raise children, etc.)
- 7 (DK)
- 8 (Refused)

_____(1308)

7. Some employees share the same job and work part-time and receive some or all of the benefits that would be available if they worked full-time. This is called job sharing. How interested would you be in working in a job sharing arrangement? Would you be (read 4-1)?
- 4 Very interested
 - 3 Somewhat interested
 - 2 Not too interested
 - 1 Not interested at all
-
- 5 (I currently work in a job sharing arrangement)
 - 6 (DK)
 - 7 (Refused)
 - 8 (Not applicable/Self employed/Work at home) _____(1309)

(READ:) Now I'd like to ask you some questions about skills and training.

8. When you began your current job, were you required to have any of the following? How about (read A-C)?
- 1 Yes
 - 2 No
 - 3 (DK)
 - 4 (Refused)
-
- A. Vocational training after high school resulting in a license or proficiency (pro-FISH-in-see) exam _____(1310)
 - B. Prior experience as a supervisor in a related occupation _____(1311)
 - C. On-the-job training _____(1312)

(If code 1 in #8-C, Continue;
Otherwise, Skip to #10)

9. How long was your on-the-job training? Was it (read 1-3)?

1 Less than one month

2 1 to 12 months

3 More than 12 months

4 (DK)

5 (Refused)

_____(1313)

10. Which of the following skills are a primary part of your job? (Read A-G)

1 Yes

2 No

3 (DK)

4 (Refused)

A. Supervisory skills

_____(1318)

B. Customer service skills

_____(1319)

C. Working as a team member

_____(1320)

D. Computer skills

_____(1317)

E. Basic math skills

_____(1315)

F. Writing skills

_____(1314)

G. Problem solving skills (If necessary, read:)

Problem solving is the ability to identify problems, come up with solutions, and make effective decisions

_____(1316)

(SURVENT NOTE: Ask #11 and #12 for each A-G, as appropriate, before going to the next A-G)

11. How likely are you to seek additional training within the next 5 years to increase your skills in each of the following areas? How about **(read A-G)**? Are you very likely, somewhat likely, not very likely, or very unlikely?

- 4 Very likely
- 3 Somewhat likely
- 2 Not very likely
- 1 Very unlikely

- 5 (DK)
- 6 (Refused)

- A. Supervisory skills _____(1325)
- B. Customer service skills _____(1326)
- C. Working as a team member _____(1327)
- D. Computer skills _____(1324)
- E. Basic math skills _____(1322)
- F. Writing skills _____(1321)
- G. Problem solving skills _____(1323)

12. **(For each code 1 or 2 in #11 A-G, ask:)** Is that because you don't use the skill, because you don't need additional training, because of the cost of training, or for some other reason? **(Display A-G, as appropriate)**

- 1 Don't use the skill
- 2 Don't need additional training
- 3 Because of cost of training
- 4 For some other reason
- 5 (DK)
- 6 (Refused)

- A. Supervisory skills _____(1332)
- B. Customer service skills _____(1333)

12. (Continued:)

- C. Working as a team member _____(1334)
- D. Computer skills _____(1331)
- E. Basic math skills _____(1329)
- F. Writing skills _____(1328)
- G. Problem solving skills _____(1330)

**(If code 3 or 4 to ANY in #11 A-G, Continue;
Otherwise, Skip to #13a)**

13. How likely would you be to go to each of the following places to get additional training? How about **(read A-G)?** Would you be very likely, somewhat likely, not too likely or not likely at all?

- 4 Very likely
- 3 Somewhat likely
- 2 Not too likely
- 1 Not likely at all

- 5 (DK)
- 6 (Refused)

- A. On-site or on-the-job training _____()
- B. Community college _____()
- C. 4-year college _____()
- D. Private training institution _____()
- E. Adult continuing education _____()
- F. Local Workforce Center _____()
- G. Somewhere else _____()

HOLD _____(1335-
1341)

13a. In general, if you needed additional training in skills that were relevant to your job, who would pay for this training? Would your employer pay all the costs, would you share the costs with your employer, or would you pay all the costs yourself? If your funding would come from some other source, please say so. **(INTERVIEWER NOTE: Code employer reimbursement as 1)**

1 Employer pay all costs

2 Share costs

3 You pay all costs

4 Some other source

5 (Depends)

6 (Not applicable/Self employed/Work at home)

7 (DK)

8 (Refused)

_____()

14. Please tell me if your current employer offers any of the following benefits, even if you do not personally receive that benefit. **(Read A-G)**

1 Yes

2 No

3 (DK)

4 (Refused)

A. Health insurance

_____(1342)

B. Pension or retirement benefits

_____(1343)

C. Sick leave

_____(1344)

D. Vacation or annual leave

_____(1345)

E. Subsidized continuing education

_____(1346)

F. Short- or long-term disability

_____(1347)

G. Life insurance

_____(1348)

15. Now I'd like to ask you some questions about your workplace environment. For each of the following, please tell me whether it is something that is very important to you, somewhat important, not too important, or not at all important when thinking about your workplace. How about (read and rotate A-F)?

- 4 Very important
- 3 Somewhat important
- 2 Not too important
- 1 Not important at all

- 5 (DK)
- 6 (Refused)
- 7 (Not applicable/Self employed/Work at home)

- A. Relationships with coworkers _____(1349)
- B. Flexibility of hours _____(1350)
- C. Relationship with your supervisor _____(1351)
- D. Having a short commute _____(1352)
- E. Having a workplace that is racially, religiously, or ethnically diverse _____(1353)
- F. Having the option to telecommute or work from home _____(1354)

UNEMPLOYED/NOT IN LABOR FORCE (ASKED ONLY OF THOSE WHO ARE NOT CURRENTLY EMPLOYED)

(If code 06, 07, or 08 in #1, Continue;
If code 04, 05, or 09-11 in #1, Skip to #17;
Otherwise, Skip to Note before #21)

16. Are you currently receiving unemployment insurance benefits?

- 1 Yes
- 2 No
- 3 (DK)
- 4 (Refused) _____(1355)

(If code 06 in #1, Skip to #18;
Otherwise, Continue)

17. How likely are you to look for paid work in the next five years? Would you say that you are very likely, somewhat likely, not very likely, or very unlikely to look for work within the next 5 years?

- 4 Very likely
- 3 Somewhat likely
- 2 Not very likely
- 1 Very unlikely

5 (DK)

6 (Refused)

_____(1356)

(If code 2, 3, or 4 in #17, Continue;
Otherwise, Skip to Note before #21)

18. [(If code 04, 05, or 07-11 in #1, read:) If you decide to look for work in the next five years, would you/(If code 06 in #1, read:) Do you] prefer to work full-time or part-time?

- 1 Full-time
- 2 Part-time
- 3 (Either)
- 4 (DK)
- 5 (Refused)

_____(1357)

19. If you were to get a paid job in the next five years, how important would each of the following benefits be to you? For each, tell me if it would be very important, somewhat important, not too important, or not important at all. How about (read A-G)?

- 4 Very important
- 3 Somewhat important
- 2 Not too important
- 1 Not important at all

- 5 (DK)
- 6 (Refused)

- A. Health insurance _____(1358)
- B. Pension or retirement benefits _____(1359)
- C. Sick leave _____(1360)
- D. Vacation or annual leave _____(1361)
- E. Subsidized continuing education _____(1362)
- F. Short- or long-term disability _____(1363)
- G. Life insurance _____(1364)

20. If you were to get a paid job in the next five years, please tell me how important each of the following aspects of a workplace environment would be to you, whether it would be very important, somewhat important, not too important, or not important at all. How about (read and rotate A-F)?

- 4 Very important
- 3 Somewhat important
- 2 Not too important
- 1 Not important at all

- 5 (DK)
- 6 (Refused)

- A. Relationships with coworkers _____(1365)

20. (Continued:)

- B. Flexibility of hours _____(1366)
- C. Relationship with your supervisor _____(1367)
- D. Having a short commute _____(1368)
- E. Having a workplace that is racially, religiously,
or ethnically diverse _____(1369)
- F. Having the option to telecommute or work from
home _____(1370)

**RETIREMENT NEEDS OF NON-RETIREEES (ASKED ONLY OF THOSE WHO ARE
CURRENTLY EMPLOYED, STUDENTS, OR UNEMPLOYED LOOKING FOR WORK)**

**(If code 01, 02, 05, or 06 in #1, Continue;
Otherwise, Skip to Note before #26)**

(READ:) Now I'd like to ask you some questions about
retirement.

21. At what age do you plan to retire? Your best guess is
fine. (Open ended **and code actual age**)

- 96 96+
- 97 (I am already retired)
- 98 (DK)
- 99 (Refused)

(1371) (1372)

**(If code 97 in #21, Skip to Note before #26;
Otherwise, Continue)**

(If code 01-96 in #21 AND
[Response in #21 minus response in S2]
equals 10 or less, Continue;
If code 01-96 in #21 AND
[Response in #21 minus response in S2]
equals 11-15, Skip to #25;
Otherwise, Skip to Note before #26)

22. Would the availability of additional training or education entice you to continue working longer?

- 1 Yes
- 2 No
- 3 (DK)
- 4 (Refused)

_____(1373)

23. How likely are you to seek paid work at some point after you retire? Would you say you are very likely, somewhat likely, not too likely, or not at all likely?

- 4 Very likely
- 3 Somewhat likely
- 2 Not too likely
- 1 Not likely at all
- 5 (DK)
- 6 (Refused)

_____(1374)

(If code 2, 3, or 4 in #23, Continue;
Otherwise, Skip to #25)

24. If you do work after you retire, are you likely to work full-time or part-time?

- 1 Full-time
- 2 Part-time
- 3 (DK)
- 4 (Refused)

_____(1375)

25. Phased retirement is when your employer allows you to cut back on your working hours gradually over several years before retiring totally. If phased retirement was an option for you, would you be very likely, somewhat likely, not too likely, or not likely at all to take it?

- 4 Very likely
- 3 Somewhat likely
- 2 Not too likely
- 1 Not likely at all

5 (DK)

6 (Refused)

7 (Not applicable/Self employed/Work at home) _____(1376)

RETIREMENT NEEDS OF RETIREES (ASKED ONLY OF THOSE WHO ARE RETIRED)

**(If code 03 in #1 OR code 97 in #21, Continue;
Otherwise, Skip to #29)**

26. At what age did you retire? (Open ended **and code actual age)**

97 97+

98 (DK)

99 (Refused)

_____ (1377) (1378)

27. Even though you are retired, how likely are you to get a paying job within the next five years? Are you very likely, somewhat likely, not too likely, or not likely at all?

- 4 Very likely
- 3 Somewhat likely
- 2 Not too likely
- 1 Not likely at all

5 (Already have a job in retirement)

6 (DK)

7 (Refused)

_____(1379)

(If code 2, 3, or 4 in #27, Continue;
Otherwise, Skip to #29)

28. If you were to get a paying job in the next five years, would you be more likely to work full-time or part-time?

- 1 Full-time
- 2 Part-time
- 3 (DK)
- 4 (Refused)

_____(1380)

QUALITY OF LIFE (ASKED OF ALL)

29. Now I'd like to ask you some questions about general quality of life issues. Please tell me how important each of the following issues are to you. How about **(read and rotate A-F)**? Is this very important, somewhat important, not too important, or not important at all to you?

- 4 Very important
- 3 Somewhat important
- 2 Not too important
- 1 Not important at all

- 5 (DK)
- 6 (Refused)

- A. Having time to spend with friends and family _____(1401)
- B. Having access to quality schools _____(1402)
- C. Having access to affordable housing _____(1403)
- D. Living close to a metropolitan area _____(1404)
- E. Living in an area with a low crime rate _____(1405)
- F. Living in an area with little traffic congestion _____(1406)

DEMOGRAPHICS (ASKED OF ALL)

(READ:) Finally, a few questions for statistical purposes only,...

D1. NUMBER OF ADULTS: Including yourself, how many adults age 18 or older currently reside in your household? Please do not count students living away from home or boarders. (Open ended and code)

- 0 None
- 1 One
- 2 Two
- 3 Three
- 4 Four
- 5 Five
- 6 Six
- 7 Seven or more
- 8 (DK)
- 9 (Refused)

_____(1407)

D2. NUMBER OF CHILDREN: How many children, under 18 years of age, currently reside in your household? Please do not count students living away from home or boarders. (Open ended and code)

- 0 None
- 1 One
- 2 Two
- 3 Three
- 4 Four
- 5 Five
- 6 Six
- 7 Seven or more
- 8 (DK)
- 9 (Refused)

_____(1408)

(DEMOGRAPHICS CONTINUED)

D3. EDUCATION: What is the highest grade or year of school you have completed? (Open ended and code)

- 1 No formal education
- 2 First through 8th grade
- 3 Some high school
- 4 High school graduate or GED
- 5 Some college
- 6 Associates degree
- 7 Four-year college graduate
- 8 Graduate degree or above
- 9 (DK)
- 0 (Refused)

_____(1409)

**(If code 8 in D3, Continue;
Otherwise, Skip to D5)**

D4. Which of the following graduate degrees do you hold?
(Read A-C)

- 1 Yes
- 2 No
- 3 (DK)
- 4 (Refused)

A. Master's degree _____(1410)

B. Ph. D (Doctoral degree) _____(1411)

C. First professional degree, such as a law degree
or a medical degree _____(1412)

D5. ETHNICITY: Are you of Hispanic or Latino origin or descent?

- 1 Yes
- 2 No
- 3 (DK)
- 4 (Refused)

_____(1413)

(DEMOGRAPHICS CONTINUED)

D6. RACE: Which group best describes your racial background? (Read 01-06)

- 01 White
- 02 Black or African-American
- 03 Asian (includes Chinese, Filipino, Japanese, Asian Indian, Korean, Vietnamese, other Asian)
- 04 American Indian or Alaskan Native
- 05 Native Hawaiian or other Pacific Islander
- 06 Other (do NOT list)

- 07 (DK)
- 08 (Refused)
- 09 (Hispanic)

(1414) (1415)

D7. IMMIGRATION STATUS: Have you moved to the United States from another country within the past 5 years?

- 1 Yes
- 2 No
- 3 (DK)
- 4 (Refused)

_____(1416)

(DEMOGRAPHICS CONTINUED)

D8. INCOME: Was your total annual household income, before taxes, in 2002 over or under \$50,000?

(If Under, ask:) Is it over or under \$30,000?

(If Under, ask:) Is it over or under \$15,000?

(If Under, ask:) Is it over or under \$5,000?

(If Over, ask:) Is it over or under \$75,000?

(If Over, ask:) Is it over or under \$100,000?

(If Over, ask:) Is it over or under \$125,000?

- 1 Less than \$5,000
- 2 \$5,000 to less than \$15,000
- 3 \$15,000 to less than \$30,000
- 4 \$30,000 to less than \$50,000
- 5 \$50,000 to less than \$75,000
- 6 \$75,000 to less than \$100,000
- 7 \$100,000 to less than \$125,000
- 8 \$125,000 or more
- 9 (DK)
- 0 (Refused)

_____(1417)

D9. GENDER: (Ask if necessary:) Are you male or female?

- 1 Male
- 2 Female

_____(1418)

D10. How many different phone NUMBERS do you have coming into your household, not including lines dedicated to a fax machine, modem, or used strictly for business purposes? Do not include cellular phones. (Open ended and code)

- 1 One
- 2 Two
- 3 Three
- 4 Four
- 5 Five or more
- 6 (DK)
- 7 (Refused)

_____(1419)

**(VALIDATE PHONE NUMBER AND
THANK RESPONDENT BY SAYING:)**

Again, this is _____, with the Gallup
Organization of _____. I would like to thank you
for your time. Our mission is to "help people be
heard" and your opinions are important to Gallup
in accomplishing this.

INTERVIEWER I.D. #:

_____(571-
574)

jlw\2003\Commonwealth of Virginia\
Commonwealth of Virginia Urban Institute 0307

Appendix E: Richmond, Abingdon, and Washington, DC Forum Attendees

Richmond Forum Attendees:

Mr. George N. Williams
Alexandria Economic Development
Partnership
1729 King Street, Suite 410
Alexandria, Virginia 22314

Ms. Patricia King
Deputy Executive Director Richmond Career
Advancement Center
201 West Broad Street
Suite 200
Richmond, VA 23220

Ms. Cynthia Martin
Executive Director
Arlington Community Action Program, Inc.
(ACAP)
P.O. Box 6250,
Arlington, VA 22206

Ms. Chona Bravante
Micro-Enterprise Coordinator
Arlington Community Action Program, Inc.
(ACAP)
P.O.Box 6250
Arlington, Virginia 22206

Dr. Joseph M. Ashley
Assistant Commissioner, Director of Grants &
Special Programs
Department of Rehabilitative Services
8004 Franklin Farms Drive
Richmond, VA 23288

Mr. Brian K. Davis - Planning, Programs and
Services Supervisor
Virginia Workforce Investment Act Division
703 East Main Street, Room 121
Richmond, VA 23219

Ms. Marietta Salyer
Virginia Employment Commission, Tri-Cities
5240 Oaklawn Boulevard
Hopewell, Virginia 23860

Mr. Gordon N. Dixon Jr.
NFIB/Virginia State Director
108 North 8th Street
Richmond, VA 23219

Ms. Merry Hanson
Director, Workforce Programs
Workforce Today!
P.O. Box 1505, 300 East Main Street, 1st
Floor
Charlottesville, VA 22902

Ms. Becky Sperlazza
One Stop Manager
Virginia Workforce Center
P.O. Box 7106
Fredericksburg, VA 22404

Ms. Patricia Cummins
Title V Project Director
Virginia Department for the Aging
1600 Forest Avenue, Suite 102
Richmond, VA 23229

Ms. Jane Conroy
Executive Director
Virginia Council Against Poverty
520 W. Franklin St. Suite 202
Richmond, VA 23220

Ms. Lynda Schoenbeck
LWIB Director, Region 12
Alexandria/Arlington Workforce Investment
Board
3033 Wilson Boulevard, Suite 300

Arlington, VA 22201
Ms. Carla Leap
Arlington Division of Social Services
Arlington Employment Center
3033 Wilson Boulevard
Arlington, VA 22201

Ms. Katherine DeRosear
Workforce Development Services
Virginia Community College System
101 North 14th Street
Richmond, VA 23219

Ms. Claudia Jackson
Intensive Case Manager Supervisor
Welfare Reform
Richmond City Department of Social Services
P.O. Box 10129

Richmond, VA 23219-2383
Dr. Warren Stewart
Advocacy Volunteer Coordinator
AARP
707 East Main Street, Suite 900
Richmond, Virginia 23219

Mr. Harris Norman Greene, Jr.
Plan Manager
Richmond Career Advancement Center
201 West Broad Street
Richmond, Virginia 23220

Mr. A.R. Giesen, Jr,
Special Assistant for Legislative Relations
530 East Main Street, Suite 800
Richmond, Virginia 23219

Abingdon Forum Attendees:

Mr. Jerry Crabtree
Administrator
Washington County Skill Center
848 Thompson Drive
Abingdon, VA 24210

Mr. Kenneth Litten
Workforce Guidance Counselor
Washington County Skill Center
848 Thompson Drive
Abingdon, VA 24210

Mr. Roger Dalton
Chair of The Western Virginia Workforce
Development Board (2003-2004)
Director of Marketing and Communications
National College of Business and Technology
1813 East Main Street
Salem, Virginia 24153

Ms. Penny McCallum
Director, Old Dominion University, Abingdon
Campus
Southwest Virginia Higher Education Center
P.O. BOX 1987
Abingdon, VA 24212

Ms. Brenda Legge
Director for Center of Business and Industry
140 Jonesboro Rd.
P.O. Box 828
Abingdon, VA 24212

Mr. Hoyt McConnell
Coordinator, Virginia Initiative for
Employment not Welfare/ VIEW
Tazewell Department of Social Services
315 School Street
P.O. Box 149
Tazewell, Virginia 24651-0149

Mr. Larry A. Overbay
Human Services Director
Department of Rehabilitative Services
468 E. Main St.
Abingdon, VA 24210

Mr. Gerald Smith
Office Manager
Virginia Employment Commission
Post Office Box 16129
Bristol 24209-6129

Mr. Joe Pendergast
Bristol Compressors
Manager of Human Resources
15185 Industrial Park Road
Bristol, Virginia 24202

National Forum Attendees:

Mr. Robert M. Ebbin
Director, Research Projects
National Restaurant Association
1200 17th St., NW
Washington, DC 20036

Ms. Shelby J. Robinson
Regional Director
Virginia Employment Commission
13135 Lee Jackson Highway, Suite 340
Fairfax, Virginia 22033

Mr. C. Michael Ferraro
President/CEO
TRAINING Solutions, Inc.
P.O. Box 220100
Chantilly, Virginia 20153

Mr. Martin Simon
National Governors Association
Center for Best Practices
Social, Economic and Workforce Programs
Division
444 North Capitol Street
Washington, DC 20001-1512

Mr. Justin Nelson
Executive Director
National Gay & Lesbian Chamber of
Commerce
The Council of Chambers and Business
Organizations (CCBO)
1001 Pennsylvania Avenue, NW
7th Floor North
Washington, DC 20004

Ms. Stacey Jarrett Wagner
Director of Workforce Initiatives
Center for Workforce Success
National Association of Manufacturers
1331 Pennsylvania Ave., NW
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Ms. Andrea Wooten
President & CEO
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Appendix F: Supplementary Exhibits

Appendix Exhibit F-1
Percent of Population in Each Age Category in 2003 and 2008 by Area

Area	Age 0-15	Age 16-24	Age 25-44	Age 45 and
2003				
<i>Virginia</i>	21.3 %	12.3 %	30.3 %	36.1 %
<i>MSAs</i>				
Charlottesville	20.8	15.2	30.3	33.8
Danville	19.4	10.7	25.6	44.3
Johnson City	18.0	10.6	26.4	45.1
Lynchburg	19.8	12.2	27.1	40.9
Norfolk	23.1	13.8	30.2	32.9
Richmond	21.7	11.6	30.4	36.3
Roanoke	19.2	10.5	27.4	42.9
Washington D.C.	22.3	11.2	33.6	32.9
<i>Non-MSA Areas</i>				
Northeast	19.3	10.0	24.8	45.8
Northwest	19.7	13.5	26.9	40.0
Southside	19.0	11.6	27.5	41.9
Southwest	18.1	14.6	26.8	40.6
2008				
<i>Virginia</i>	20.5 %	12.4 %	28.2 %	38.9 %
<i>MSAs</i>				
Charlottesville	21.2	14.4	30.8	33.7
Danville	18.0	11.1	22.8	48.1
Johnson City	17.5	10.3	24.3	48.0
Lynchburg	18.2	12.0	25.8	44.1
Norfolk	22.3	13.4	27.9	36.5
Richmond	20.7	11.3	28.7	39.3
Roanoke	17.8	11.1	25.0	46.1
Washington D.C.	21.6	11.8	30.9	35.8
<i>Non-MSA Areas</i>				
Northeast	18.5	10.4	23.1	47.9
Northwest	18.9	13.8	25.2	42.1
Southside	17.8	11.6	25.9	44.7
Southwest	17.0	15.0	25.0	42.9

Source: Authors' tabulations from population data provided by the Virginia Employment Commission.

Appendix Exhibit F-2
Educational Attainment of Population 25 Years and Older in 1990 and 2000 by Area

Area	Less Than High School Diploma	High School Diploma	Some College or Associate's Degree	College Degree	Graduate or Professional Degree
<i>Education in 1990</i>					
<i>Virginia</i>	24.8%	26.6%	24.0%	15.4%	9.1%
<i>MSAs</i>					
Charlottesville	23.1	22.7	20.9	18.4	14.9
Danville	43.2	28.9	18.0	6.4	3.5
Johnson City	42.0	28.2	18.9	7.4	3.5
Lynchburg	33.4	28.8	21.6	10.3	5.9
Norfolk	21.2	29.5	29.4	13.4	6.5
Richmond	24.2	27.0	24.9	16.1	7.7
Roanoke	27.0	29.2	25.9	12.1	5.9
Washington D.C.	12.6	20.7	25.5	24.7	16.6
<i>Non-MSA Areas</i>					
Northeast	38.8	31.3	17.7	8.0	3.8
Northwest	33.6	33.4	18.6	9.4	5.0
Southside	44.8	30.2	16.1	6.0	2.9
Southwest	43.0	28.2	17.8	6.7	4.3
<i>Education in 2000</i>					
<i>Virginia</i>	18.5%	26.0%	26.0%	17.9%	11.6%
<i>MSAs</i>					
Charlottesville	16.0	22.4	21.5	21.0	19.0
Danville	32.2	33.2	23.3	7.1	4.2
Johnson City	29.7	32.1	23.9	9.4	4.9
Lynchburg	23.8	31.6	25.4	12.6	6.6
Norfolk	15.2	27.6	33.2	15.4	8.5
Richmond	17.4	26.2	27.2	19.5	9.8
Roanoke	19.1	30.1	28.4	14.9	7.6
Washington D.C.	11.3	18.1	24.0	26.6	20.0
<i>Non-MSA Areas</i>					
Northeast	29.2	33.4	22.0	9.9	5.5
Northwest	25.3	34.7	22.1	11.4	6.5
Southside	35.2	33.3	20.3	7.4	3.8
Southwest	31.8	31.8	22.6	8.4	5.5

Source: Authors' tabulations from the 2000 Census, U.S. Census Bureau.

Appendix Exhibit F-3
Race and Ethnicity in 1990 and 2000 by Area

Area	White Non- Hispanic	Black Non- Hispanic	Other Non- Hispanic	Multi-Racial Non- Hispanic	Hispanic
<i>Race in 1990</i>					
<i>Virginia</i>	76.0%	18.7%	2.8%	NA	2.5%
<i>MSAs</i>					
Charlottesville	82.4	14.5	2.2	NA	1.0
Danville	67.6	31.6	0.4	NA	0.3
Johnson City	97.4	2.0	0.4	NA	0.2
Lynchburg	80.9	18.1	0.5	NA	0.6
Norfolk	66.9	28.2	2.7	NA	2.2
Richmond	68.3	29.0	1.7	NA	1.0
Roanoke	85.6	12.9	0.9	NA	0.6
Washington D.C.	78.3	9.8	6.0	NA	5.9
<i>Non-MSA Areas</i>					
Northeast	64.2	34.4	0.7	NA	0.7
Northwest	91.7	6.8	0.7	NA	0.8
Southside	57.7	41.6	0.3	NA	0.4
Southwest	92.0	6.7	0.9	NA	0.4
<i>Race in 2000</i>					
<i>Virginia</i>	70.2%	19.4%	4.1%	1.6%	4.7%
<i>MSAs</i>					
Charlottesville	79.3	13.9	3.2	1.3	2.2
Danville	65.1	32.5	0.6	0.6	1.3
Johnson City	96.4	1.9	0.4	0.6	0.6
Lynchburg	79.2	17.8	1.2	0.9	1.0
Norfolk	60.8	30.9	3.3	1.9	3.1
Richmond	64.0	30.0	2.6	1.1	2.3
Roanoke	83.3	13.0	1.5	1.1	1.1
Washington D.C.	67.6	11.1	8.7	2.5	10.1
<i>Non-MSA Areas</i>					
Northeast	64.4	31.4	0.9	0.8	2.5
Northwest	88.5	6.3	0.9	0.9	2.5
Southside	56.5	41.2	0.5	0.6	1.1
Southwest	89.9	6.9	1.0	0.7	1.4

Source: Authors' tabulations from the 1990 and 2000 Census, U.S. Census Bureau.

Appendix Exhibit F - 4
Labor Force Participation, Employment, and Unemployment Rates from 1998 to 2002 by Area

Labor Force Participation Rate								
	1998	1999	2000	2001	2002	Average 1998-2002	Percent Change 1998-2000	Percent Change 2000-2002
<i>Virginia</i>	71.9 %	71.7 %	72.5 %	73.0 %	73.3 %	72.5 %	0.0 %	1.2 %
<i>MSAs</i>								
Charlottesville	65.6	64.6	66.0	65.1	63.7	65.0	0.0	-3.5
Danville	72.7	72.9	72.8	75.0	74.7	73.6	0.2	2.6
Johnson City	64.4	62.8	62.4	62.9	62.1	62.9	-3.1	-0.4
Lynchburg	67.7	68.1	69.0	68.2	68.4	68.3	1.9	-1.0
Norfolk	73.4	72.8	72.8	73.4	75.2	73.5	-0.8	3.4
Richmond	73.3	72.9	73.7	74.0	74.7	73.7	0.6	1.4
Roanoke	76.8	75.4	76.3	76.8	77.1	76.5	-0.6	1.0
Washington D.C.	76.4	76.5	78.4	78.7	78.5	77.7	2.7	0.1
<i>Non-MSA Areas</i>								
Northeast	62.0	62.6	62.9	64.4	64.4	63.3	1.5	2.4
Northwest	70.7	70.5	70.0	72.0	72.2	71.1	-0.9	3.1
Southside	64.1	64.0	63.9	65.2	62.2	63.9	-0.3	-2.7
Southwest	60.9	60.7	60.6	60.6	61.1	60.8	-0.5	0.8
Employment Rate								
	1998	1999	2000	2001	2002	Average 1998-2002	Percent Change 1998-2000	Percent Change 2000-2002
<i>Virginia</i>	69.8 %	69.7 %	70.9 %	70.5 %	70.4 %	70.2 %	1.6 %	-2.0 %
<i>MSAs</i>								
Charlottesville	64.7	63.8	65.0	63.8	62.0	63.9	0.5	-4.6
Danville	68.6	68.4	69.4	68.6	68.3	68.7	1.1	-1.5
Johnson City	60.8	59.7	60.1	59.6	58.6	59.7	-1.1	-2.5
Lynchburg	66.0	66.7	67.7	65.4	64.6	66.1	2.6	-4.6
Norfolk	70.8	70.3	70.9	70.7	72.1	71.0	0.1	1.7
Richmond	71.4	71.1	72.3	71.5	71.8	71.6	1.3	-0.8
Roanoke	75.0	73.9	75.2	74.7	74.5	74.7	0.1	-0.9
Washington D.C.	75.0	75.2	77.5	76.9	76.1	76.1	3.3	-1.8
<i>Non-MSA Areas</i>								
Northeast	58.5	59.5	60.5	61.6	61.4	60.3	3.5	1.5
Northwest	68.8	68.8	68.8	70.1	69.8	69.3	0.0	1.4
Southside	61.1	61.3	61.6	61.8	58.0	60.8	0.8	-5.8
Southwest	57.5	57.1	57.4	56.3	56.8	57.0	-0.2	-1.1

(Exhibit continued on next page)

Appendix Exhibit F - 4 (continued)

Unemployment Rate								
	1998	1999	2000	2001	2002	Average 1998-2002	Change 1998-2000	Change 2000-2002
<i>Virginia</i>	2.9 %	2.8 %	2.2 %	3.5 %	4.1 %	3.1	-24.1 %	85.2 %
<i>MSAs</i>								
Charlottesville	1.4	1.3	1.5	2.0	2.6	1.8	7.1	70.5
Danville	5.6	6.2	4.7	8.5	8.5	6.7	-16.1	81.8
Johnson City	5.6	4.9	3.7	5.4	5.7	5.1	-33.9	54.1
Lynchburg	2.6	2.1	1.9	4.2	5.5	3.3	-26.9	189.4
Norfolk	3.4	3.4	2.6	3.6	4.2	3.4	-23.5	61.3
Richmond	2.6	2.4	1.9	3.4	4.0	2.9	-26.9	109.5
Roanoke	2.3	1.9	1.5	2.7	3.4	2.4	-34.8	128.2
Washington D.C.	1.7	1.6	1.2	2.3	3.0	2.0	-29.4	152.8
<i>Non-MSA Areas</i>								
Northeast	5.7	5.0	3.8	4.3	4.7	4.7	-33.3	23.4
Northwest	2.6	2.4	1.8	2.7	3.4	2.6	-30.8	88.8
Southside	4.7	4.3	3.6	5.3	6.8	4.9	-23.4	87.6
Southwest	5.6	5.9	5.3	7.1	7.0	6.2	-5.4	32.9

Source: U.S. Bureau of Labor Statistics.

Appendix Exhibit F-5
Jobs in Demand in Virginia: 1998-2008
Top 25 occupations with the largest number of job openings

Charlottesville

- | | |
|---|---|
| • Cashiers | • Health Prof, Paraprof, & Technicians,
not elsewhere classified |
| • Salespersons, Retail | • Janitors & Cleaners |
| • Registered Nurses | • Prof, Paraprof, Technicians,
not elsewhere classified |
| • Waiters & Waitresses | • Hand Packers & Packagers |
| • General Office Clerks | • Laborers, Landscapers, & Groundskeepers |
| • General Managers & Top Executives | • Systems Analysts |
| • Combined Food Prep & Service Workers | • Postsecondary Teachers,
not elsewhere classified |
| • Teachers, Secondary School | • Maids & Housekeeping Cleaners |
| • Food Preparation Workers | • Licensed Practical/Vocational Nurses |
| • Secretaries, Except Legal or Medical | • Physicians |
| • Receptionists & Information Clerks | • Cooks, Fast Food |
| • Nursing Aides & Orderlies | • Licensed Practical/Vocational Nurses |
| • Helpers, Laborers & Movers,
not elsewhere classified | • Laborers, Landscapers, & Groundskeepers |
| • Hand Packers & Packagers | • Telemarketers, Door-To-Door Sales |
| • Teachers, Secondary School | |
| • Teachers, Elementary | |

Danville

- | | |
|---|---|
| • Cashiers | • Hand Packers & Packagers |
| • Salespersons, Retail | • Freight, Stock & Mtrl Movers, Hand,
not elsewhere classified |
| • Waiters & Waitresses | • Farm Equipment Operators |
| • Helpers, Laborers & Movers,
not elsewhere classified | • Agriculture, Forestry, Fishing Workers,
not elsewhere classified |
| • General Office Clerks | • Receptionists & Information Clerks |
| • Textile Machine Operators/Tndrs | • Production Inspectors, Graders |
| • General Managers & Top Executives | • Licensed Practical/Vocational Nurses |
| • Combined Food Prep & Service Workers | • Home Health Aides |
| • Teachers, Secondary School | • First Line Supervisors: Production/Operating |
| • Registered Nurses | • Truck Drivers, Heavy |
| • Food Preparation Workers | • Machinery Mechanics: Textile |
| • Nursing Aides & Orderlies | |
| • Janitors & Cleaners | |
| • Teachers, Elementary | |

(exhibit continued on next page)

Appendix Exhibit F-5 (continued)
Jobs in Demand in Virginia: 1998-2008
Top 25 occupations with the largest number of job openings

Johnson City

- | | |
|---|---|
| • Cashiers | • Nursing Aides & Orderlies |
| • Salespersons, Retail | • Truck Drivers, Light |
| • Waiters & Waitresses | • Registered Nurses |
| • Farm Equipment Operators | • Teachers, Elementary |
| • Agriculture, Forestry, Fishing Workers,
not elsewhere classified | • Janitors & Cleaners |
| • Combined Food Prep & Service Workers | • Truck Drivers, Heavy |
| • General Office Clerks | • Receptionists & Information Clerks |
| • General Managers & Top Executives | • Sales Representatives, Mfg & Wholesale |
| • Helpers, Laborers & Movers,
not elsewhere classified | • Secretaries, Except Legal or Medical |
| • Food Preparation Workers | • Cooks, Fast Food |
| • Assemblers & Fabricators,
not elsewhere classified | • Freight, Stock & Mtrl Movers, Hand,
not elsewhere classified |
| • Hand Packers & Packagers | • Licensed Practical/Vocational Nurses |
| • Teachers, Secondary School | • Laborers, Landscapers, & Groundskeepers |
| | • Telemarketers, Door-To-Door Sales |

Lynchburg

- | | |
|---|---|
| • Cashiers | • Teachers, Elementary |
| • Salespersons, Retail | • Truck Drivers, Heavy |
| • General Office Clerks | • Assemblers & Fabricators, NEC
not elsewhere classified |
| • Waiters & Waitresses | • Truck Drivers, Light |
| • General Managers & Top Executives | • Guards |
| • Helpers, Laborers & Movers,
not elsewhere classified | • Telemarketers, Door-To-Door Sales |
| • Combined Food Prep & Service Workers | • Secretaries, Except Legal or Medical |
| • Janitors & Cleaners | • Freight, Stock & Mtrl Movers, Hand,
not elsewhere classified |
| • Hand Packers & Packagers | • Correctional Officers |
| • Teachers, Secondary School | • Laborers, Landscapers, & Groundskeepers |
| • Food Preparation Workers | • Prof, Paraprof, Technicians,
not elsewhere classified |
| • Registered Nurses | • Truck Drivers, Heavy |
| • Nursing Aides & Orderlies | • Machinery Mechanics: Textile |
| • Receptionists & Information Clerks | |

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Appendix Exhibit F-5 (continued)
Jobs in Demand in Virginia: 1998-2008
Top 25 occupations with the largest number of job openings

Norfolk-VA Beach-Newport News

- | | |
|---|--|
| • Cashiers | • Hand Packers & Packagers |
| • Salespersons, Retail | • Teachers, Elementary |
| • Waiters & Waitresses | • Guards |
| • General Office Clerks | • Nursing Aides & Orderlies |
| • General Managers & Top Executives | • Prof, Paraprof, Technicians,
not elsewhere classified |
| • Combined Food Prep & Service Workers | • Telemarketers, Door-To-Door Sales |
| • Helpers, Laborers & Movers,
not elsewhere classified | • Laborers, Landscapers, & Groundskeepers |
| • Teachers, Secondary School | • Truck Drivers, Light |
| • Food Preparation Workers | • Secretaries, Except Legal or Medical |
| • Registered Nurses | • Cooks, Fast Food |
| • Systems Analysts | • Computer Support Specialists |
| • Janitors & Cleaners | • Cooks, Restaurant |
| • Receptionists & Information Clerks | |

Richmond-Petersburg

- | | |
|---|--|
| • Salespersons, Retail | • Food Preparation Workers |
| • Cashiers | • Teachers, Elementary |
| • General Office Clerks | • Correctional Officers |
| • General Managers & Top Executives | • Truck Drivers, Light |
| • Waiters & Waitresses | • Truck Drivers, Heavy |
| • Helpers, Laborers & Movers,
not elsewhere classified | • Secretaries, Except Legal or Medical |
| • Combined Food Prep & Service Workers | • Prof, Paraprof, Technicians,
not elsewhere classified |
| • Registered Nurses | • Nursing Aides & Orderlies |
| • Janitors & Cleaners | • Adjustment Clerks |
| • Receptionists & Information Clerks | • Laborers, Landscapers, & Groundskeepers |
| • Teachers, Secondary School | • Computer Support Specialists |
| • Systems Analysts | • Guards |
| • Hand Packers & Packagers | |

(exhibit continued on next page)

Appendix Exhibit F-5 (continued)
Jobs in Demand in Virginia: 1998-2008
Top 25 occupations with the largest number of job openings

Roanoke

- | | |
|---|---|
| • Cashiers | • Nursing Aides & Orderlies |
| • Salespersons, Retail | • Truck Drivers, Light |
| • General Office Clerks | • Guards |
| • Waiters & Waitresses | • Teachers, Secondary School |
| • General Managers & Top Executives | • Truck Drivers, Heavy |
| • Helpers, Laborers & Movers, NEC
not elsewhere classified | • Systems Analysts |
| • Combined Food Prep & Service Workers | • Secretaries, Except Legal or Medical |
| • Registered Nurses | • Laborers, Landscapers, & Groundskeepers |
| • Hand Packers & Packagers | • Sales Representatives, Mfg & Wholesale |
| • Janitors & Cleaners | • Bank Tellers |
| • Food Preparation Workers | • Teachers, Elementary |
| • Receptionists & Information Clerks | • Adjustment Clerks |
| • Telemarketers, Door-To-Door Sales | |

Washington D.C.-VA portion

- | | |
|---|--|
| • Salespersons, Retail | • Prof, Paraprof, Technicians,
not elsewhere classified |
| • Systems Analysts | • Teachers, Secondary School |
| • Cashiers | • Secretaries, Except Legal or Medical |
| • General Managers & Top Executives | • Food Preparation Workers |
| • Computer Engineers | • Managers & Administrators,
not elsewhere classified |
| • Computer Programmers | • Guards |
| • Computer Support Specialists | • Registered Nurses |
| • General Office Clerks | • Teachers, Elementary |
| • Waiters & Waitresses | • Truck Drivers, Light |
| • Janitors & Cleaners | • Accountants & Auditors |
| • Combined Food Prep & Service Workers | • Laborers, Landscapers, & Groundskeepers |
| • Receptionists & Information Clerks | • Engineering/Math/Computer/Natural Sci Mgrs |
| • Helpers, Laborers & Movers,
not elsewhere classified | |

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Appendix Exhibit F-5 (continued)
Jobs in Demand in Virginia: 1998-2008
Top 25 occupations with the largest number of job openings

Northeast Virginia

- | | |
|---|---|
| • Cashiers | • Registered Nurses |
| • Salespersons, Retail | • Farm Equipment Operators |
| • Waiters & Waitresses | • Hand Packers & Packagers |
| • Teachers, Secondary School | • Janitors & Cleaners |
| • Meat, Poultry & Fish Cutters, Hand | • Truck Drivers, Heavy |
| • General Managers & Top Executives | • Home Health Aides |
| • Combined Food Prep & Service Workers | • Maids & Housekeeping Cleaners |
| • General Office Clerks | • Laborers, Landscapers, & Groundskeepers |
| • Food Preparation Workers | • Licensed Practical/Vocational Nurses |
| • Teachers, Elementary | • Bank Tellers |
| • Nursing Aides & Orderlies | • Receptionists & Information Clerks |
| • Helpers, Laborers & Movers,
not elsewhere classified | • Teacher Aides, Paraprofessional |
| • Agriculture, Forestry, Fishing Workers,
not elsewhere classified | |

Northwest Virginia

- | | |
|---|---|
| • Cashiers | • Nursing Aides & Orderlies |
| • Salespersons, Retail | • Janitors & Cleaners |
| • Waiters & Waitresses | • Truck Drivers, Heavy |
| • General Office Clerks | • Agriculture, Forestry, Fishing Workers,
not elsewhere classified |
| • Teachers, Secondary School | • Meat, Poultry & Fish Cutters, Hand |
| • General Managers & Top Executives | • Receptionists & Information Clerks |
| • Combined Food Prep & Service Workers | • Farm Equipment Operators |
| • Helpers, Laborers & Movers,
not elsewhere classified | • Assemblers & Fabricators,
not elsewhere classified |
| • Teachers, Elementary | • Secretaries, Except Legal or Medical |
| • Food Preparation Workers | • Maids & Housekeeping Cleaners |
| • Guards | • Truck Drivers, Light |
| • Hand Packers & Packagers | • Telemarketers, Door-To-Door Sales |
| • Registered Nurses | • Cooks, Restaurant |
| • Receptionists & Information Clerks | |

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Appendix Exhibit F-5 (continued)
Jobs in Demand in Virginia: 1998-2008
Top 25 occupations with the largest number of job openings

Southside Virginia

- | | |
|---|--|
| • Cashiers | • Helpers, Laborers & Movers,
not elsewhere classified |
| • Salespersons, Retail | • Truck Drivers, Heavy |
| • Waiters & Waitresses | • Nursing Aides & Orderlies |
| • Teachers, Secondary School | • Hand Packers & Packagers |
| • General Office Clerks | • Home Health Aides |
| • Agriculture, Forestry, Fishing Workers,
not elsewhere classified | • Janitors & Cleaners |
| • Combined Food Prep & Service Workers | • Textile Machine Operators/Tndrs |
| • Farm Equipment Operators | • Laborers, Landscapers, & Groundskeepers |
| • General Managers & Top Executives | • Licensed Practical/Vocational Nurses |
| • Registered Nurses | • Secretaries, Except Legal or Medical |
| • Food Preparation Workers | • Teacher Aides, Paraprofessional |
| • Teachers, Elementary | • Prof, Paraprof, Technicians,
not elsewhere classified |
| • Correctional Officers | |

Southwest Virginia

- | | |
|---|---|
| • Cashiers | • Nursing Aides & Orderlies |
| • Salespersons, Retail | • Assemblers & Fabricators,
not elsewhere classified |
| • Waiters & Waitresses | • Truck Drivers, Heavy |
| • General Office Clerks | • Hand Packers & Packagers |
| • Combined Food Prep & Service Workers | • Receptionists & Information Clerks |
| • Teachers, Secondary School | • Sewing Machine Operators, Garment |
| • General Managers & Top Executives | • Freight, Stock & Mtrl Movers, Hand,
not elsewhere classified |
| • Food Preparation Workers | • Secretaries, Except Legal or Medical |
| • Helpers, Laborers & Movers,
not elsewhere classified | • Janitors & Cleaners |
| • Registered Nurses | • First Line Supervisors: Production/Operating |
| • Agriculture, Forestry, Fishing Workers,
not elsewhere classified | • Truck Drivers, Light |
| • Teachers, Elementary | • Laborers, Landscapers, & Groundskeepers |
| • Farm Equipment Operators | |

Appendix Exhibit F-6

Declining Jobs in Virginia: 1998-2008

Charlottesville

- Textile Machine Operators/Tenders
- Child Care Workers, Private
- Farm Equipment Operators
- Production Inspectors, Graders
- Cleaners & Servants, Private
- Agriculture, Forestry, Fishing Workers, not elsewhere classified
- Cannery Workers
- Textile Machine Setters/Ops
- Machinery Mechanics: Textile
- Computer Operators, Ex Peripheral
- Typists, Including Word Processing
- Supervisors, Farm Workers
- Proofreaders & Copy Markers
- Inspectors, Testers, Graders, Precision
- Lathe & Turning Machine Setters/Ops, M/P
- Punching Machine Setters/Ops, M/P
- Press Machine Setters/Ops, M/P
- Farm Managers
- Helpers: Electricians & Related
- Packaging & Filling Machine Ops/Tenders
- Law Clerks
- Farm & Home Management Advisors
- Photographers
- Musicians, Instrumental
- License Clerks

Danville

- Textile Machine Ops/Tenders
- Sewing Machine Ops, Garment
- Production Inspectors, Graders
- Textile Machine Setters/Ops
- Freight, Stock & Mtrl Movers, Hand, not elsewhere classified
- First Line Supervisors: Production/Operating
- Textile Bleach & Dye Machine Ops/Tenders
- Industrial Truck & Tractor Operators
- Farm Equipment Operators
- Agriculture, Forestry, Fishing Workers, not elsewhere classified
- Textile Draw-Out Machine Ops/Tenders
- Sewing Machine Ops, Non-Garment
- Helpers, Laborers & Movers, not elsewhere classified
- Crushing/Grinding/Mixing Mach Ops/Tenders
- Industrial Machinery Mechanics
- Extrud/Form/Press Machine Ops/Tenders
- Machine Operators/Tenders, not elsewhere classified
- Maintenance Repairers, General Utility
- Pressing Machine Ops/Tenders, Textiles
- Furnace, Kiln, Oven, Drier or Kettle Ops
- Inspectors, Testers, Graders, Precision
- Extrud/Form/Press Machine Setters/Ops
- Conveyor Operators/Tenders
- Industrial Production Managers
- Traffic, Shipping & Receiving Clerks

(exhibit continued on next page)

Appendix Exhibit F-6 (continued)
Declining Jobs in Virginia: 1998-2008

Johnson City-Kingsport-Bristol

- Farm Equipment Operators
- Agriculture, Forestry, Fishing Workers, not elsewhere classified
- Sewing Machine Ops, Garment
- Production Inspectors, Graders
- Stock Clerks, Sales Floor
- Farm Managers
- Farm & Home Management Advisors
- Sewing Machine Ops, Non-Garment
- Typists, Including Word Processing
- Computer Operators, Ex Peripheral
- Cleaners & Servants, Private
- Butchers & Meatcutters, Retail
- Supervisors, Farm Workers
- Slaughterers & Meat Packers
- Inspectors, Testers, Graders, Precision
- Machine Forming Operators, M/P
- Electrical/Electronic Equip Assemblers, Prec
- Service Station Attendants
- Bank Tellers
- First Line Supervisors: Production/Operating
- Communication/Transportation/Utilities Managers
- Cost Estimators
- Management Analysts
- Mechanical Engineering Technicians/Technols
- Urban & Regional Planners

Lynchburg

- Textile Machine Ops/Tenders
- Production Inspectors, Graders
- Farm Equipment Operators
- Agriculture, Forestry, Fishing Workers, not elsewhere classified
- Sewing Machine Ops, Garment
- Child Care Workers, Private
- Stock Clerks, Sales Floor
- Bank Tellers
- Bookkeeping, Accounting, Audit Clerks
- Textile Machine Setters/Ops
- Railroad Brake, Signal & Switch Ops
- Computer Operators, Ex Peripheral
- Machine Tool Cutting Ops, M/P
- Woodworking Machine Ops/Tenders, Ex Sawing
- Typists, Including Word Processing
- Switchboard Operators
- Inspectors, Testers, Graders, Precision
- Offset Lithographic Press Ops
- Cleaners & Servants, Private
- Sawing Machine Operators/Tenders
- Insurance Sales Workers
- Peripheral EDP Equipment Operators
- Supervisors, Farm Workers
- Operations Research Analysts
- Psychiatric Aides

(exhibit continued on next page)

Appendix Exhibit F-6 (continued)
Declining Jobs in Virginia: 1998-2008

Norfolk-VA Beach-Newport News

- | | |
|---|--|
| • Computer Operators, Ex Peripheral | • Farm Equipment Operators |
| • Bank Tellers | • Railroad Brake, Signal & Switch Ops |
| • Typists, Incl Word Processing | • Transportation Attendants |
| • Child Care Workers, Private | • Machine Tool Cutting Ops, M/P |
| • Inspectors, Testers, Graders, Precision | • Helpers: Electricians & Related |
| • Motor Vehicle Operators, NEC | • Riggers |
| • Welfare Eligibility Workers | • Loan Interviewers |
| • Shipfitters | • Peripheral EDP Equipment Operators |
| • Cleaners & Servants, Private | • Directory Assistance Operators |
| • Human Resources Clerks, Ex Payroll/Time | • Communication Equipment Ops,
not elsewhere classified |
| • Switchboard Operators | • Station Installers & Repairers, Telephone |
| • Procurement Clerks | • Rail-Track Laying & Maintenance Equip Ops |
| • Law Clerks | |

Richmond-Petersburg

- | | |
|--------------------------------------|---|
| • Computer Operators, Ex Peripheral | • Offset Lithographic Press Ops |
| • Bank Tellers | • Transit Clerks |
| • Chemists | • Production Inspectors, Graders |
| • Child Care Workers, Private | • Typesetting & Composing Machine Ops |
| • Sewing Machine Ops, Garment | • Directory Assistance Operators |
| • Typists, Including Word Processing | • Station Installers & Repairers, Telephone |
| • Cleaners & Servants, Private | • Butchers & Meatcutters, Retail |
| • Farm Equipment Operators | • Statement Clerks |
| • Peripheral EDP Equipment Operators | • Housekeepers & Butlers, Private |
| • Textile Machine Ops/Tenders | • Transportation Attendants |
| • Switchboard Operators | • Railroad Brake, Signal & Switch Ops |
| • Helpers: Electricians & Related | • Procurement Clerks |
| • Film Strippers, Printing | |

(exhibit continued on next page)

Appendix Exhibit F-6 (continued)
Declining Jobs in Virginia: 1998-2008

Roanoke

- | | |
|--|---|
| • Sewing Machine Ops, Garment | • Machine Tool Cutting Ops, M/P |
| • Textile Machine Ops/Tenders | • Child Care Workers, Private |
| • Computer Operators, Ex Peripheral | • Machine Forming Operators, M/P |
| • Railroad Brake, Signal & Switch Ops | • Switchboard Operators |
| • Bank Tellers | • Railroad Conductors & Yardmasters |
| • Typists, Including Word Processing | • Agriculture, Forestry, Fishing Workers,
not elsewhere classified |
| • Production Inspectors, Graders | • Furnace Operators & Tenders |
| • First Line Supervisors: Production/Operating | • Law Clerks |
| • Transportation Attendants | • Proofreaders & Copy Markers |
| • Inspectors, Testers, Graders, Precision | • Procurement Clerks |
| • Rail-Track Laying & Maintenance Equip Ops | • Psychiatric Aides |
| • Farm Equipment Operators | • Transportation Inspectors |
| • Locomotive Firers | |

Washington D.C.-VA portion

- | | |
|--|---|
| • Computer Operators, Ex Peripheral | • Ship Engineers |
| • Station Installers & Repairers, Telephone | • Seamen, Able |
| • Directory Assistance Operators | • Paste-up Workers |
| • Farm Equipment Operators | • Mathematical Scientist,
not elsewhere classified |
| • Peripheral EDP Equipment Operators | • Traffic Technicians |
| • Procurement Clerks | • Compositors & Typesetters, Precision |
| • Communication Equipment Ops,
not elsewhere classified | • Railroad Brake, Signal & Switch Ops |
| • Transportation Attendants | • Shipfitters |
| • Law Clerks | • Housekeepers & Butlers, Private |
| • Motor Vehicle Operators,
not elsewhere classified | • Custom Tailors & Sewers |
| • Typesetting & Composing Machine Ops | • Sewing Machine Ops, Garment |
| • Film Strippers, Printing | • Seamen, Ordinary & Maine Oilers |
| • Offset Lithographic Press Ops | • Laborers, Landscapers, & Groundskeepers |
| | • Engineering/Math/Computer/Natural Sci Mgrs |

(exhibit continued on next page)

Appendix Exhibit F-6 (continued)
Declining Jobs in Virginia: 1998-2008

Northeast Virginia

- Farm Equipment Operators
- Sewing Machine Ops, Garment
- Agriculture, Forestry, Fishing Workers, not elsewhere classified
- Textile Machine Ops/Tenders
- Production Inspectors, Graders
- Child Care Workers, Private
- Stock Clerks, Sales Floor
- Cleaners & Servants, Private
- Service Station Attendants
- Bookkeeping, Accounting, Audit Clerks
- Freight, Stock & Mtrl Movers, Hand, not elsewhere classified
- Secretaries, Except Legal or Medical
- Bank Tellers
- Psychiatric Technicians
- Typists, Including Word Processing
- Computer Operators, Ex Peripheral
- Butchers & Meatcutters, Retail
- Psychiatric Aides
- Supervisors, Farm Workers
- Gardening, Nursery, Lawn Occs
- Woodworking Machine Ops/Tenders, Ex Sawing
- Pressing Machine Ops/Tenders, Textiles
- Paper Goods Machine Setters/Ops
- Machinists
- Chemical Equipment Controllers/Ops

Northwest Virginia

- Sewing Machine Ops, Garment
- Farm Equipment Operators
- Agriculture, Forestry, Fishing Workers, NEC
- Textile Machine Ops/Tenders
- Production Inspectors, Graders
- Child Care Workers, Private
- Bank Tellers
- Supervisors, Farm Workers
- Pressing Machine Ops/Tenders, Textiles
- Cleaners & Servants, Private
- Machine Tool Cutting Ops, M/P
- Machine Forming Operators, M/P
- Farm Managers
- Farm & Home Management Advisors
- Film Strippers, Printing
- Typesetting & Composing Machine Ops
- Textile Draw-Out Machine Ops/Tenders
- Railroad Brake, Signal & Switch Ops
- Gardening, Nursery, Lawn Occs
- Woodworking Machine Ops/Tenders, Ex Sawing
- Offset Lithographic Press Ops
- Inspectors, Testers, Graders, Precision
- Electric Powerline Installers & Repairers
- Helpers: Electricians & Related
- Service Station Attendants

(exhibit continued on next page)

Appendix Exhibit F-6 (continued)
Declining Jobs in Virginia: 1998-2008

Southside Virginia

- Textile Machine Ops/Tenders
- Farm Equipment Operators
- Agriculture, Forestry, Fishing Workers, not elsewhere classified
- Sewing Machine Ops, Garment
- Production Inspectors, Graders
- Freight, Stock & Mtrl Movers, Hand, not elsewhere classified
- Textile Machine Setters/Ops
- Secretaries, Except Legal or Medical
- Stock Clerks, Sales Floor
- Woodworking Machine Ops/Tenders, Ex Sawing
- Bookkeeping, Accounting, Audit Clerks
- First Line Supervisors: Production/Operating
- Child Care Workers, Private
- Farm & Home Management Advisors
- Supervisors, Farm Workers
- Textile Draw-Out Machine Ops/Tenders
- Pressing Machine Ops/Tenders, Textiles
- Railroad Brake, Signal & Switch Ops
- Typists, Including Word Processing
- Woodworking Machine Setters, Ex Sawing
- Textile Bleach & Dye Machine Ops/Tenders
- Industrial Production Managers
- Cleaners & Servants, Private
- Electric Powerline Installers & Repairers
- Service Station Attendants

Southwest Virginia

- Sewing Machine Ops, Garment
- Textile Machine Ops/Tenders
- Production Inspectors, Graders
- Farm Equipment Operators
- Agriculture, Forestry, Fishing Workers, not elsewhere classified
- Freight, Stock & Mtrl Movers, Hand, NEC not elsewhere classified
- Roof Bolters, Mining
- Bookkeeping, Accounting, Audit Clerks
- First Line Supervisors: Production/Operating
- Textile Machine Setters/Ops
- Cabinetmakers & Bench Carpenters
- Woodworking Machine Ops/Tenders, Ex Sawing
- Mine Machinery Mechanics
- Stock Clerks, Sales Floor
- Secretaries, Except Legal or Medical
- Pressing Machine Ops/Tenders, Textiles
- Sawing Machine Operators/Tenders
- Grader, Dozer & Scraper Operators
- Textile Bleach & Dye Machine Ops/Tenders
- Mining Machine Operators, not elsewhere classified
- Shuttle Car Operators
- Machine Operators/Tenders, not elsewhere classified
- Traffic, Shipping & Receiving Clerks
- Woodworking Machine Setters, Ex Sawing
- Typists, Including Word Processing

Appendix Exhibit F - 7

Virginia Distribution of Occupations by Job Skills Qualifications and Area, 2008 Projections

Job Qualification	Projected Employment 2008	Percent of Total Employment 2008	Projected Job Open 2008	Percent of Total Job Openings 2008
Charlottesville				
On-the-job training or work experience	58,854	60.7 %	2,218	61.9 %
Short-term on-the-job training	38,888	40.1	1,594	44.5
Moderate-term on-the-job training	11,615	12.0	350	9.8
Long-term on-the-job training	5,582	5.8	179	5.0
Work experience in related occupation	2,769	2.9	95	2.7
Postsecondary education or training below a bachelor's degree	12,407	12.8	453	12.7
Postsecondary vocational training	3,729	3.8	122	3.4
Associate degree	8,678	8.9	331	9.2
Bachelor's degree or higher	25,714	26.5	910	25.4
Bachelor's degree	12,224	12.6	436	12.2
Work experience, plus a bachelor's or higher degree	6,417	6.6	192	5.4
Master's degree	2,320	2.4	91	2.5
Doctoral degree	3,444	3.6	144	4.0
First Professional degree	1,309	1.3	47	1.3
Total	96,975	100 %	3,581	100 %
Danville				
On-the-job training or work experience	36,666	75.3 %	986	76.3 %
Short-term on-the-job training	20,869	42.9	646	50.0
Moderate-term on-the-job training	10,882	22.3	221	17.1
Long-term on-the-job training	3,136	6.4	73	5.6
Work experience in related occupation	1,779	3.7	46	3.6
Postsecondary education or training below a bachelor's degree	3,838	7.9	105	8.1
Postsecondary vocational training	1,522	3.1	41	3.2
Associate degree	2,316	4.8	64	4.9
Bachelor's degree or higher	8,187	16.8	202	15.6
Bachelor's degree	4,329	8.9	115	8.9
Work experience, plus a bachelor's or higher degree	2,737	5.6	53	4.1
Master's degree	559	1.1	17	1.3
Doctoral degree	53	0.1	2	0.2
First Professional degree	509	1.0	15	1.2
Total	48,691	100 %	1,293	100 %

(Exhibit continued on next page)

Appendix Exhibit F - 7 (continued)
Virginia Distribution of Occupations by Job Qualifications and MSA/Non-MSA, 2008 Projections

Job Qualification	Projected Employment 2008	Percent of Total Employment 2008	Projected Job Open 2008	Percent of Total Job Openings 2008
Johnson City-Kingsport-Bristol				
On-the-job training or work experience	33,979	75.1 %	1,087	78.3 %
Short-term on-the-job training	21,162	46.8	742	53.5
Moderate-term on-the-job training	8,452	18.7	229	16.5
Long-term on-the-job training	2,852	6.3	75	5.4
Work experience in related occupation	1,513	3.3	41	3.0
Postsecondary education or training below a bachelor's degree	3,240	7.2	98	7.1
Postsecondary vocational training	1,517	3.4	45	3.2
Associate degree	1,723	3.8	53	3.8
Bachelor's degree or higher	7,998	17.7	203	14.6
Bachelor's degree	3,979	8.8	114	8.2
Work experience, plus a bachelor's or higher degree	3,166	7.0	65	4.7
Master's degree	427	0.9	11	0.8
Doctoral degree	62	0.1	2	0.1
First Professional degree	364	0.8	11	0.8
Total	45,217	100 %	1,388	100 %
Lynchburg				
On-the-job training or work experience	79,471	71.5 %	2,620	73.2 %
Short-term on-the-job training	46,425	41.8	1,705	47.7
Moderate-term on-the-job training	21,450	19.3	576	16.1
Long-term on-the-job training	7,393	6.7	205	5.7
Work experience in related occupation	4,203	3.8	134	3.7
Postsecondary education or training below a bachelor's degree	9,888	8.9	316	8.8
Postsecondary vocational training	4,097	3.7	131	3.7
Associate degree	5,791	5.2	185	5.2
Bachelor's degree or higher	21,806	19.6	641	17.9
Bachelor's degree	11,820	10.6	358	10.0
Work experience, plus a bachelor's or higher degree	6,844	6.2	169	4.7
Master's degree	1,358	1.2	46	1.3
Doctoral degree	803	0.7	36	1.0
First Professional degree	981	0.9	32	0.9
Total	111,165	100 %	3,577	100 %

(Exhibit continued on next page)

Appendix Exhibit F - 7 (continued)
Virginia Distribution of Occupations by Job Qualifications and MSA/Non-MSA, 2008 Projections

Job Qualification	Projected Employment 2008	Percent of Total Employment 2008	Projected Job Open 2008	Percent of Total Job Openings 2008
Norfolk-Virginia Beach-Newport News MSA				
On-the-job training or work experience	531,315	66.0 %	20,186	67.6 %
Short-term on-the-job training	334,517	41.6	14,136	47.3
Moderate-term on-the-job training	111,767	13.9	3,282	11.0
Long-term on-the-job training	55,291	6.9	1,726	5.8
Work experience in related occupation	29,740	3.7	1,042	3.5
Postsecondary education or training below a bachelor's degree	83,540	10.4	2,944	9.9
Postsecondary vocational training	34,868	4.3	1,158	3.9
Associate degree	48,672	6.0	1,786	6.0
Bachelor's degree or higher	189,836	23.6	6,725	22.5
Bachelor's degree	109,485	13.6	4,014	13.4
Work experience, plus a bachelor's or higher degree	51,956	6.5	1,621	5.4
Master's degree	13,019	1.6	493	1.7
Doctoral degree	6,335	0.8	298	1.0
First Professional degree	9,041	1.1	299	1.0
Total	804,691	100%	29,855	100%
Richmond-Petersburg				
On-the-job training or work experience	423,771	66.4 %	15,862	67.5 %
Short-term on-the-job training	254,565	39.9	10,549	44.9
Moderate-term on-the-job training	105,599	16.6	3,156	13.4
Long-term on-the-job training	40,859	6.4	1,334	5.7
Work experience in related occupation	22,748	3.6	823	3.5
Postsecondary education or training below a bachelor's degree	64,360	10.1	2,315	9.8
Postsecondary vocational training	25,333	4.0	873	3.7
Associate degree	39,027	6.1	1,442	6.1
Bachelor's degree or higher	149,615	23.5	5,334	22.7
Bachelor's degree	84,462	13.2	3,168	13.5
Work experience, plus a bachelor's or higher degree	43,509	6.8	1,324	5.6
Master's degree	9,210	1.4	371	1.6
Doctoral degree	4,780	0.7	210	0.9
First Professional degree	7,654	1.2	261	1.1
Total	637,746	100 %	23,511	100 %

(Exhibit continued on next page)

Appendix Exhibit F - 7 (continued)
Virginia Distribution of Occupations by Job Qualifications and MSA/Non-MSA, 2008 Projections

Job Qualification	Projected Employment 2008	Percent of Total Employment 2008	Projected Job Open 2008	Percent of Total Job Openings 2008
Roanoke				
On-the-job training or work experience	113,890	70.0 %	3,877	71.2 %
Short-term on-the-job training	69,918	42.9	2,640	48.5
Moderate-term on-the-job training	27,456	16.9	734	13.5
Long-term on-the-job training	10,430	6.4	304	5.6
Work experience in related occupation	6,086	3.7	199	3.7
Postsecondary education or training below a bachelor's degree	16,500	10.1	551	10.1
Postsecondary vocational training	7,163	4.4	230	4.2
Associate degree	9,337	5.7	321	5.9
Bachelor's degree or higher	32,402	19.9	1,019	18.7
Bachelor's degree	17,805	10.9	590	10.8
Work experience, plus a bachelor's or higher degree	10,288	6.3	280	5.1
Master's degree	1,995	1.2	71	1.3
Doctoral degree	325	0.2	14	0.3
First Professional degree	1,989	1.2	64	1.2
Total	162,792	100 %	5,447	100 %
Washington D.C.				
On-the-job training or work experience	814,520	57.6 %	34,823	55.5 %
Short-term on-the-job training	518,899	36.7	23,987	38.2
Moderate-term on-the-job training	177,384	12.5	6,301	10.0
Long-term on-the-job training	77,386	5.5	2,902	4.6
Work experience in related occupation	40,851	2.9	1,633	2.6
Postsecondary education or training below a bachelor's degree	157,011	11.1	7,188	11.4
Postsecondary vocational training	58,492	4.1	2,367	3.8
Associate degree	98,519	7.0	4,821	7.7
Bachelor's degree or higher	443,619	31.3	20,770	33.1
Bachelor's degree	278,479	19.7	13,719	21.9
Work experience, plus a bachelor's or higher degree	120,555	8.5	4,998	8.0
Master's degree	23,092	1.6	1,104	1.8
Doctoral degree	6,847	0.5	372	0.6
First Professional degree	14,646	1.0	577	0.9
Total	1,415,150	100 %	62,781	100 %

(Exhibit continued on next page)

Appendix Exhibit F - 7 (continued)
Virginia Distribution of Occupations by Job Qualifications and MSA/Non-MSA, 2008 Projections

Job Qualification	Projected Employment 2008	Percent of Total Employment 2008	Projected Job Open 2008	Percent of Total Job Openings 2008
Northeast Virginia				
On-the-job training or work experience	38,019	71.7 %	1,216	73.7 %
Short-term on-the-job training	25,366	47.9	886	53.7
Moderate-term on-the-job training	7,142	13.5	179	10.8
Long-term on-the-job training	3,444	6.5	89	5.4
Work experience in related occupation	2,067	3.9	62	3.8
Postsecondary education or training below a bachelor's degree	4,445	8.4	136	8.2
Postsecondary vocational training	1,941	3.7	57	3.5
Associate degree	2,504	4.7	79	4.8
Bachelor's degree or higher	10,543	19.9	299	18.1
Bachelor's degree	5,996	11.3	186	11.3
Work experience, plus a bachelor's or higher degree	3,379	6.4	77	4.7
Master's degree	699	1.3	22	1.3
Doctoral degree	0	0.0	0	0.0
First Professional degree	469	0.9	14	0.8
Total	53,007	100 %	1,651	100 %
Northwest Virginia				
On-the-job training or work experience	184,240	71.7 %	6,542	72.2 %
Short-term on-the-job training	110,080	42.8	4,412	48.7
Moderate-term on-the-job training	47,179	18.4	1,296	14.3
Long-term on-the-job training	17,367	6.8	515	5.7
Work experience in related occupation	9,614	3.7	319	3.5
Postsecondary education or training below a bachelor's degree	22,423	8.7	770	8.5
Postsecondary vocational training	9,733	3.8	310	3.4
Associate degree	12,690	4.9	460	5.1
Bachelor's degree or higher	50,354	19.6	1,755	19.4
Bachelor's degree	26,589	10.3	975	10.8
Work experience, plus a bachelor's or higher degree	15,190	5.9	418	4.6
Master's degree	3,444	1.3	139	1.5
Doctoral degree	2,937	1.1	148	1.6
First Professional degree	2,194	0.9	75	0.8
Total	257,017	100 %	9,067	100 %

(Exhibit continued on next page)

Appendix Exhibit F - 7 (continued)
Virginia Distribution of Occupations by Job Qualifications and MSA/Non-MSA, 2008 Projections

Job Qualification	Projected Employment 2008	Percent of Total Employment 2008	Projected Job Open 2008	Percent of Total Job Openings 2008
Southside Virginia				
On-the-job training or work experience	71,789	71.6 %	2,132	73.5 %
Short-term on-the-job training	41,483	41.4	1,378	47.5
Moderate-term on-the-job training	19,392	19.3	471	16.2
Long-term on-the-job training	6,839	6.8	169	5.8
Work experience in related occupation	4,075	4.1	114	3.9
Postsecondary education or training below a bachelor's degree	8,599	8.6	246	8.5
Postsecondary vocational training	3,171	3.2	88	3.0
Associate degree	5,428	5.4	158	5.5
Bachelor's degree or higher	19,882	19.8	521	18.0
Bachelor's degree	10,730	10.7	303	10.5
Work experience, plus a bachelor's or higher degree	6,427	6.4	132	4.6
Master's degree	1,423	1.4	44	1.5
Doctoral degree	405	0.4	15	0.5
First Professional degree	897	0.9	27	0.9
Total	100,270	100 %	2,899	100 %
Southwest Virginia				
On-the-job training or work experience	180,846	71.5 %	5,058	72.5 %
Short-term on-the-job training	96,969	38.4	3,129	44.9
Moderate-term on-the-job training	55,408	21.9	1,219	17.5
Long-term on-the-job training	18,724	7.4	442	6.3
Work experience in related occupation	9,745	3.9	268	3.8
Postsecondary education or training below a bachelor's degree	21,549	8.5	602	8.6
Postsecondary vocational training	8,662	3.4	231	3.3
Associate degree	12,887	5.1	371	5.3
Bachelor's degree or higher	50,380	19.9	1,316	18.9
Bachelor's degree	25,608	10.1	697	10.0
Work experience, plus a bachelor's or higher degree	14,994	5.9	299	4.3
Master's degree	3,849	1.5	126	1.8
Doctoral degree	3,714	1.5	131	1.9
First Professional degree	2,215	0.9	63	0.9
Total	252,775	100 %	6,976	100 %

Source: Authors' tabulations are based on 2008 occupational projections data from the Virginia Employment Commission and occupational skill classifications from the U.S. Bureau of Labor Statistics.

Exhibit F - 8
Occupation of Virginia's Workers in 2003

Occupation	Percent	Number
Professional Worker	21.7 %	728,589
Skilled Tradesman	11.6	389,476
Manager, Executive or Official	11.5	386,119
Service Worker	10.1	339,113
Clerical or Office Worker	9.8	329,040
Technology Professional	8.9	298,822
Sales Worker	8.0	268,604
Semi-Skilled Worker	7.4	248,459
Unskilled Laborer	6.7	224,956
Business Owner	1.8	60,436
Manufacturer's Representative	0.8	26,860
Agriculture & Fishery Workers	0.5	16,788
Other	1.2	40,291
Total	100.0	3,357,555

Source: Authors' tabulations from August 2003 weighted survey data collected by The Gallup Organization.

Exhibit F - 9
Current Skills of Virginia's Workers by Region

	Virginia		Northern VA		Central VA		Bay Area		Tidewater Area		Southside		Shenandoah Valley		Southwest VA	
Problem Solving Skills	91.4 %	3,070,000	95.3 %	920,550	88.8 %	583,610	93.3 %	188,090	92.0 %	646,660	86.5 %	195,510	82.0 %	165,370	91.9 %	369,190
Working as a Team	89.8	3,014,800	91.5	883,240	85.0	559,500	90.9	183,270	91.4	642,390	87.2	197,110	91.9	185,230	90.6	364,050
Basic Math Skills	83.5	2,803,100	85.2	822,600	81.3	535,450	80.9	163,170	87.3	613,550	85.5	193,200	78.5	158,290	78.8	316,850
Writing Skills	81.8	2,745,900	89.5	863,930	77.4	509,540	93.0	187,540	80.3	564,360	71.0	160,570	74.4	150,040	77.1	309,920
Customer Service Skills	72.2	2,423,400	72.9	704,400	72.9	480,040	81.3	163,940	69.7	489,580	64.1	144,910	63.5	128,030	77.8	312,540
Computer Skills	70.2	2,358,800	85.1	821,300	66.5	437,930	70.1	141,330	66.6	467,710	52.8	119,480	55.3	111,480	64.6	259,560
Supervisory Skills	50.4	1,692,900	55.7	538,140	45.7	300,940	52.1	105,050	55.3	388,390	33.7	76,188	35.8	72,217	52.7	212,010

Note: Sum of percentages does not equal 100% as respondents may answer 'yes' to more than one category.

Source: Authors' tabulations from August 2003 weighted survey data collected by The Gallup Organization.

Exhibit F - 10
Current Skills of Virginia's Workers by Age

	Age 18 to 24		Age 25 to 34		Age 35 to 49		Age 50 to 65	
Problem Solving Skills	93.2 %	383,470	90.0 %	763,520	92.4 %	1,225,300	90.5 %	697,710
Working as a Team	89.2	366,990	88.0	746,490	90.6	1,202,300	90.7	699,020
Basic Math Skills	83.3	342,650	86.9	737,230	82.8	1,098,400	81.1	624,870
Writing Skills	80.3	330,390	79.9	677,910	81.0	1,075,100	85.9	662,500
Customer Service Skills	75.2	309,390	70.5	598,210	71.8	952,490	73.1	563,360
Computer Skills	60.5	248,770	72.4	614,390	69.4	920,550	74.6	575,070
Supervisory Skills	38.4	158,180	49.5	419,680	52.6	698,070	54.1	417,020

Note: Sum of columns will not equal 100% as respondents may answer 'yes' to more than one category.

Source: Authors' tabulations from August 2003 weighted survey data collected by The Gallup Organization.

Exhibit F - 11
Future Training of Virginia's Workers by Region

	Virginia		Northern VA		Central VA		Bay Area		Tidewater Area		Southside		Shenandoah		Southwest VA	
Computer Skills	71.7 %	2,406,780	72.4 %	698,520	75.4 %	496,510	78.9 %	159,097	69.0 %	484,680	70.9 %	160,212	69.1 %	139,172	66.8 %	268,620
Working as a Team	60.8	2,040,180	60.8	587,020	61.5	404,780	60.5	122,018	61.9	434,630	57.8	130,579	54.7	110,237	62.4	250,890
Problem Solving Skills	59.4	1,995,910	60.2	581,620	55.7	366,310	65.3	131,570	60.2	422,790	63.5	143,648	51.9	104,715	61.0	245,229
Supervisory Skills	54.3	1,824,390	58.4	563,480	54.8	360,710	51.3	103,427	61.7	433,230	54.7	123,661	39.6	79,812	39.8	160,054
Writing Skills	47.6	1,598,810	47.5	558,250	46.4	305,680	57.2	115,401	49.7	349,070	40.8	92,124	44.8	90,217	46.8	188,078
Customer Service Skills	47.0	1,579,209	44.5	429,870	44.5	293,240	46.6	93,935	50.7	356,000	45.6	103,152	41.9	84,597	54.4	218,517
Basic Math Skills	37.2	1,249,270	29.5	284,370	37.8	249,031	44.7	90,023	43.4	305,230	38.3	86,477	25.8	72,093	40.3	162,049

Note: Sum of columns will not equal 100% as respondents may answer 'yes' to more than one category.

Source: Authors' tabulations from August 2003 weighted survey data collected by The Gallup Organization.

Exhibit F - 12
Future Training of Virginia's Workers by Age

	Age 18 to 24		Age 25 to 34		Age 35 to 49		Age 50 to 65	
Computer Skills	77.7 %	319,880	74.1 %	628,970	69.5 %	921,970	69.5 %	536,000
Working as a Team	79.6	327,610	59.7	506,110	57.2	758,310	58.1	448,130
Problem Solving Skills	76.4	314,530	62.7	531,670	58.0	769,810	49.3	379,870
Supervisory Skills	70.7	290,690	65.5	556,040	52.6	698,120	36.3	279,510
Writing Skills	69.3	285,300	51.9	440,180	43.5	577,210	38.4	296,130
Basic Math Skills	58.1	238,917	36.7	311,100	34.5	457,190	31.4	252,920
Customer Service Skills	57.5	236,680	54.2	459,460	40.8	541,410	54.3	341,750

Note: Sum of columns will not equal 100% as respondents may answer 'yes' to more than one category.

Source: Authors' tabulations from August 2003 weighted survey data collected by The Gallup Organization.